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In diseases of the *gall-bladder or appendix*, and in cases of *essential thrombocytopenia* associated with bleeding from the stomach, surgery performed at the time of election may indeed play a useful and curative part; in respect of most of the other pathological states associated with hæmatemesis which are laboriously listed in students' manuals of medicine, constituting therein a challenge to the memory of the youthful and anon advertising the meritorious lucubrations of the "crammer," heedless resort to operation bespeaks the ignorant, the commercial, or the experimentalist, and will naturally be dismissed from further consideration by any surgeon of judgment.

Before any decision is taken on the matter of operating for, and in the presence of, a severe hæmatemesis, the greatest caution must be exercised to ensure absolute accuracy in the diagnosis of the causation of the hæmorrhage, for almost the only pathological state which justifies urgent surgery is that of *bleeding from a chronic ulcer*. There should preferably be clinical, radiological, even biochemical evidence of the existence of a chronic ulcer, or if the details of the patient's previous history are not available the anamnesis should leave in the observer's mind no doubt as to the existence of a chronic ulcer of stomach or duodenum, and no uncertainty as to this being the source of the cataclysmic menace to the patient's safety.

I had long taught that the *hæmorrhage of acute ulcer* never required surgery, and that bleeding from this source can be combated, save on the rarest occasions, by medical measures and by the transfusion of blood. Nevertheless, in several cases of this nature that I have encountered recently, non-operative measures, even the continuous blood-drip, did not succeed in arresting the hæmorrhage, and I was constrained to operate on desperately ill patients to save life. The continuous blood-drip,[5] if it did not succeed in obviating the need for operation, yet proved to be a most valuable aid to surgery, and its employment before, during, and after the operation, contributed enormously to the success that rewarded the surgical intervention.

Apart from the reference to these few acute ulcers and to a unique case of thrombocytopenia with severe hæmatemesis where urgent operation was demanded and prove successful, it is the attitude of surgery to the *bleeding of chronic peptic ulcer* that forms the burden of this communication.

### Surgical Prophylaxis of Hæmorrhage

Is surgery to be employed as a prophylactic measure against the hæmorrhage of gastroduodenal ulceration?

An answer to this question would appear to depend upon (*a*) the incidence of hæmorrhage in connexion with ulcer, (*b*) the risk with which ulcer-hæmorrhage is fraught, and (*c*) the prospective mortality of any surgical measure contemplated.

* An address delivered to the Mid-Staffordshire Medical Society on Oct. 8th.

(a) *The incidence of hæmorrhage.*—A history of hæmatemesis or of melæna or both was obtained by Hurst [6] in 18 per cent. of cases of gastric ulcer and in 25 per cent. of the duodenal ulcers examined at New Lodge. The statistics of Lord Moynihan [7] and of D. Balfour [7] of the Mayo Clinic are similar; 20 per cent. of gastric ulcers and 25 per cent. of duodenal ulcers have bled.

Crohn and Manheim [7] of the Mount Sinai Hospital, New York, found evidence of bleeding in nearly 30 per cent. of gastric ulcers, and in nearly 20 per cent. of duodenal ulcers admitted; they insist, however, that the percentage of ulcer cases gaining admission to the hospital is relatively small, and that probably only 10 per cent. of all ulcers bleed.

The cases admitted to New Lodge are necessarily of a more severe type, and Hurst's estimate of the percentage of ulcers that bleed is also about 10 per cent., which agrees with the figures of J. J. Conybeare [7] computed from the statistics of Guy's Hospital.

(b) *What is the risk to life from ulcer hæmorrhages?*—Conybeare affirms that only 2·5 per cent. of patients with ulcers that bleed die of hæmorrhage; so that the risk of loss of life by bleeding from an ulcer is only about 1 in 400 or thereabouts. Alas! however, Ernest Bulmer [8] of Birmingham found that in cases of hæmatemesis due to chronic peptic ulcer, treated by non-operative measures, there was a mortality of 11·6 per cent. The mortality of the Middlesex Hospital [9] cases of hæmorrhage from chronic peptic ulcer treated medically amounted to 21 per cent., and an almost identical percentage was found by A. M. Cooke [10] in 191 cases of gastroduodenal hæmorrhage admitted into St. Thomas's Hospital during seven years; 24·1 per cent. of these patients died.

R. S. Aitken,[11] dealing with the London Hospital figures for 1929–33, found an 11 per cent. death-rate; but in the cases classed as "severe" the mortality was no less than 42·8 per cent. F. F. Hellier,[12] dealing with the Leeds cases, records a 14·8 per cent. fatality. These are far higher figures than the comforting 2·5 per cent., and cannot be viewed complacently by those anxious to advance the therapy of ulcer-hæmorrhage. Nevertheless it seems certain that the *chances of any patient with an ulcer dying of hæmorrhage cannot be worse than 1 in 40;* the risk will vary with the length of the history and the chronicity of the ulcer. The decision in favour of surgery in peptic ulcer is not likely however to be determined on the question of prophylaxis against hæmorrhage. In the case of gastric ulcer, chronicity, the menace of malignancy, severity of pain, incapacity for work, &c., are more likely to be the deciding factors.

I have at this moment a bias in favour of an expectant attitude in the case of duodenal ulcer, regarding as indications for operation only stenosis, perforation, hæmorrhage, a large crater, duration of existence, and an incapacity for work. The only operation which is going to confer a permanent immunity from hæmorrhage is a resection or some type of exclusion, and in the case of a duodenal ulcer it would be difficult to press for an operation of this character purely as a prophylactic measure against bleeding.

(c) *The prospective mortality of an operation to prevent hæmorrhage* from a peptic ulcer will vary with the nature of the procedure envisaged, with the experience, skill, and judgment of the surgeon and with the general condition of the patient. In the most experienced and the most competent hands an operation of resection, or resection with exclusion, carries nowadays a mortality of only about 3 per cent., but this represents the acme of surgical skill and experience. Yet this figure is greater than the risk run by the possessor of a peptic ulcer of dying of hæmorrhage; an operation undertaken solely on grounds of prophylaxis against bleeding is therefore to be discountenanced.

## Previous History of Hæmorrhage

Does a history of hæmorrhage constitute an indication for surgery in chronic peptic ulcers?

The authoritative opinion of D. P. D. Wilkie [13] favours medical treatment for the first hæmorrhage and in the event of a second bleeding it is recommended to wait for ten days after it has ceased and then to operate; it is admitted however that three patients have died *during* the second hæmatemesis. The mortality of cases of hæmatemesis from chronic ulcer of the stomach or duodenum treated medically at the Middlesex Hospital from 1924–33 [9] inclusive in which a second large hæmorrhage occurred was no less than 78 per cent., and with each successive bleeding the death-rate mounts higher. This seems to indicate the need of surgery before a second hæmatemesis occurs. Bulmer, too, holds the view that in the event of a hæmatemesis being followed by the presence of occult blood in the stools for some weeks, surgical interference should be utilised without delay; this opinion coincides with the view of Charles Bolton,[14] based upon a wealth of experience which makes it of supreme value.

Probably in the near future interference before a second hæmorrhage may come to be regarded as the optimum time for surgery; on the other hand, it may be found just as difficult to persuade the resurrected patient to submit to operation as to induce the physician to realise that second and subsequent hæmorrhages are increasingly fatal. Possibly, however, medicine will have triumphed over the peptic ulcer problem and will cure ulcer of the stomach and duodenum with a sureness and certainty approximating that with which it controls diabetes, pernicious anæmia, or some of the tropical infections; the necessity for decision as to the optimum time for surgery in hæmatemesis may then no longer arise.

## Hæmorrhage from Chronic Ulcer

Does active hæmorrhage from a chronic peptic ulcer, whose existence is beyond cavil, require surgical treatment during the bleeding, or is surgery best practised after the bleeding has ceased?

It has been regarded by many, even by "interventionists," as more convenient and less harassing to operate after the first bleeding has ceased. This indeed may be a pious hope! How do we know that it will cease, or when it will cease? Surely the only rational attitude now is one of "armed expectancy."

1. In every case of hæmatemesis or melæna, whatever be the cause, immediate steps should be taken to organise donors from amongst the relatives and friends so that the certainty of a gallon of blood of the same or suitable group can be relied upon, should necessity arise. It is impossible to foretell what may happen in any case of hæmatemesis.

2. In every patient in whom the bleeding is more than slight—i.e., a pulse-rate of 100 or more and a hæmoglobin estimate of less than 80 per cent. in a man or 70 per cent. in a woman—a drip-transfusion should be commenced straightway.

3. It is desirable that every case of hæmatemesis should be transferred to an institution, and if there is a possibility of the case being one of hæmorrhage from a gastric or duodenal ulcer, the necessity for

immediate transference is the more imperative. The exsanguinated patient can be removed with drip-transfusion running when this seems indicated; objections raised on the score of the danger of transportation are thereby countered and disposed of.

### Indications for Surgery

1. Immediate operation is required in cases of *terrific bleeding* where it is obvious that some large vessel has been eroded. If the drip-transfusion is already in process, pint after pint can be very rapidly poured in while the operation is in progress.

2. Immediate operation is required in rare cases of *concomitant hæmorrhage and perforation.*

3. Early operation is necessary in those ulcer-hæmorrhages in which *drip-transfusion is failing to control the hæmoglobin*—i.e., moderate bleeding must be continuing. The "drip" should continue running during and after the operation.

4. One should operate as soon as the *hæmoglobin* has reached 90 per cent. in a man and 80 per cent. in a woman, with the "drip" still running, in:

(*a*) Cases in which recent X ray has shown a large penetrating ulcer, whether the bleeding is slight or severe, and in spite of short history.

(*b*) Cases with long and definite ulcer history, whatever the degree of bleeding; the ulcer will be fibrotic, and there will be ulceration into a definite vessel.

(*c*) Cases of pyloric or duodenal stenosis, whether the bleeding is slight or severe.

(*d*) Certain cases of mid-gastric narrowing.

(*e*) Cases of a second hæmorrhage within a year, which have a probable ulcer history. If the second hæmorrhage has followed soon after the first, the indications are even more cogent.

(*f*) Cases of severe bleeding when ulcer cannot be excluded. These want very careful consideration.

(*g*) If carcinoma is definitely suspected; precious time may otherwise be lost before the case is fit to investigate.

In all these clinical types delay in operating is fraught with the gravest peril.

### The Operation

There is, of course, no one type of operation which is appropriate to every case; the object of operation in these cases is to arrest hæmorrhage, and my own series of cases has included such a variety of operative measures as gastrotomy with ligature of the bleeding vessel, pyloric occlusion, and gastro-jejunostomy, cautery and gastro-jejunostomy, sleeve-resection, gastrectomy, gastroduodenal resection, and "resection for exclusion."

Every case has to be considered on its own merits; there can be no universal rule. Intercurrent illness, the previous habits and physical conformation of the patient, the personal courage of the patient as well as of the operator, the environment, and the technical skill of the surgeon, may all be factors which not only may influence physician and surgeon in arriving at a decision as to the desirability of surgery, but may also dictate the appropriate technique when the abdomen has been opened.

*Anæsthesia.*—The importance of operating under local anæsthesia in these cases cannot be overestimated; if the operation cannot be completed under regional and splanchnic anæsthesia, the latter may be supplemented by a short gas-and-oxygen inhalation.

In the operation of gastrectomy under ordinary conditions, I am not convinced of any superlative advantage to the patient of an operation performed entirely under local and splanchnic anæsthesia, to which a closed method of gas-and-oxygen inhalation may have to be added. A trial of this technique for nearly a year during two separate periods convinces me that it is inferior to a local and splanchnic nerve-block, with a very, very light anæsthesia of ether and chloroform, yet in "crisis-gastrectomy" in a desperately ill patient the success of the local anæsthetic may determine the success of the surgical undertaking. The strength of the solution should, of course, be reduced.

*Morphia.*—There is undoubtedly a danger of too much morphia in these cases of ulcer-hæmorrhage. The patients may have already been heavily "morphinised" in the early stages of the hæmorrhage, and where an operation under regional anæsthesia is envisaged there may be a tendency to overdose: more than gr. ¼ for a man, or gr. ⅓ for a woman, should be avoided; the danger of lung complications in those heavily dosed with morphia is a very real menace. The words of Chevalier Jackson are perhaps apposite in relation to the thoracic complications of upper abdominal surgery—"The cough reflex is the watch dog of the lungs. It seems strange that medical men should drug the watch dog asleep when his efforts are most needed. Morphia and heroin have indirectly killed thousands by the abolition of the cough reflex for every death that has resulted from their direct toxicity."

### Relative Safety of Surgery

My friend Hans Finsterer has long regarded bleeding from a chronic ulcer as an imperative indication for immediate surgery. While in the past most surgeons have stressed the repetition of bleeding as demanding operative interference, Finsterer has taught that any hæmatemesis from an ulcer is almost as urgent as a perforation.

The failure of surgery "à chaud" in the hands of other operators (Savariaud had an operative mortality of 62 per cent., Tuffier 38 per cent.) has been the result of late interference in cases treated unsuccessfully by medical measures. In the experience of the Viennese surgeon, operation must be performed within 48 hours and preferably within the first 24 hours; therefore the third day is the critical day, and the mortality goes up enormously after this. Finsterer's figures present an extraordinary testimony to the safety of this policy in his hands.

*Immediate operation:* 24–48 hours (Finsterer)

| | Cases. | Deaths. | Mortality-rate (per cent.). |
|---|---|---|---|
| Gastro-jejunostomy .. | 7 .... | 1 .... | 14·2 |
| Gastrectomy .. .. | 39 .... | 1 .... | 2·5 |

*Late operations:* Preliminary medical treatment (Finsterer)

| | | | |
|---|---|---|---|
| Gastro-jejunostomy .. | 7 .... | 3 .... | 43 |
| Excision of ulcer .. | 2 .... | 1 .... | 50 |
| Gastrectomy .. .. | 40 .... | 14 .... | 30·4 |
| | 49 | 18 | 36 |

My own attitude towards these cases can be divided into four periods:—

(*a*) A period of 1919 to 1924, when I was still profoundly influenced by the dramatic results of blood transfusion to which I had been introduced during the great war, and of which I had had considerable experience in France and Flanders. During this period of active surgical treatment of acute hæmatemesis, 20 out of 22 cases recovered from operation—a mortality of 9 per cent. These cases were almost all early operations in the first day or two of the bleeding.

(*b*) The period 1924 to 1926, during which operation was performed in only 10 cases of acute hæmatemesis, with 4 deaths—i.e., a mortality-rate of 40 per cent. The high mortality-rate may have been due to the

fact that many were dealt with in institutions remote from personal supervision, and without all the arrangements necessary for adequate and repeated transfusion. A spirit of self-criticism and a disinclination to operate "à chaud" were thereby induced. Nevertheless, the total in groups (*a*) and (*b*) amounted to 32 cases, with 6 deaths—a 19 per cent. mortality-rate.

(*c*) A period of abstention from active surgery in these cases; this attitude coincided with the impetus given to the medicinal or alkaline treatment of ulcer, resulting from the papers of MacLean and the booming of this ancient method of therapy in the lay press. During this period, the mortality of acute hæmatemesis from chronic ulcer in cases which I saw in outlying hospitals and in private practice was enormous; there were no operations for active hæmatemesis at the Middlesex Hospital during this quinquennium. A few cases were, nevertheless, operated upon outside the hospital during this period, and a few successes rewarded surgical enterprise.

(*d*) Our therapeutic armamentarium for dealing with hæmatemesis has recently been reinforced by the introduction of the "continuous intravenous blood-drip" by Marriott and Kekwick.[5] As a method of treatment it is fraught with great possibilities no less for the physician than for the surgeon. Experience with this method of giving blood has certainly brought me to operate with advantage upon cases which to their detriment might have been denied surgery; it has also slightly modified my views as to the time to operate on bleeding ulcers of the stomach and duodenum and even the type of hæmorrhage which requires surgery; it has certainly given me an increased, and increasing, confidence of bringing the undertaking to a successful issue.

## Hæmatemesis, Perforation, and Complications

There is one group of cases to which a brief reference may be made.

(*a*) In a somewhat insignificant minority of ulcer-hæmorrhages there may be *concomitant perforation*. The association is fortunately rare, for there is much truth in the dictum of Moses Behrend,[15] "perforated ulcers bleed rarely; bleeding ulcers perforate only very exceptionally." The two complications of a peptic ulcer may occur simultaneously in unmistakable fashion, and perforation will demand urgent operation; on the other hand, the twin nature of the catastrophe may be discovered only during the course of the operation. The association of an active hæmorrhage will naturally call for some modification of the technique habitually employed in dealing with perforation of a peptic ulcer.

I have actively intervened for this syndrome three times in connexion with gastric ulceration, and once for a bleeding and perforated duodenal ulcer; all four cases were dealt with by resection and all recovered. I have, however, dealt unsuccessfully with a perforated jejunal ulcer consequent upon a gastrectomy for duodenal ulcer; the jejunal ulcer was actively bleeding at the same time. In another case, after an exploration, I found it impossible to do anything for a patient with a bleeding gastro-jejunal ulcer, which still further complicated the clinical picture by eroding the transverse colon. In this last-mentioned case, with its ghastly communications, a bloody flux composed of diarrhœa and putrid melæna poured through the pathological anus into the stomach, whence it was rapidly ejected; the victim's sufferings were fortunately ended by death.

(*b*) Hæmorrhage from a peptic ulcer may *precede* perforation; the fatality of this sequence of complications is prodigious. In these cases the enfeebled condition of the patient from a hæmorrhage may mask the ordinary clinical picture of a perforation which may fail to be diagnosed.

(*c*) Finally, hæmorrhage may *complicate* the progress of a *successful operation for perforation*. In my own experience the results have been calamitous, whether the bleeding has been attacked by surgical reintervention or treated by medical measures. These hæmorrhages are usually ushered in by an increased pulse-rate and some elevation of temperature; they occur, as a rule, from 7 to 21 days after the initial emergency operation. The hæmorrhage may originate from the sutured ulcer itself, from some other ulcer in the stomach, or it may be a diffuse parenchymatous bleeding from the gastric wall. In two cases of my own, this last-mentioned condition of the gastric mucosa was found, and both these ended fatally.

Is there any prophylactic measure against this most lethal combination of catastrophe? Resection of stomach or duodenum can hardly be urged as a routine measure for perforated ulcer, though Alessandri[16] and certain other continental surgeons speak well of it in early cases. In the hands of skilled and experienced surgeons it may be a sound measure, but an enormously increased mortality from perforated ulcer would result if this operation were regarded as the appropriate form of surgery in every case.

*Post-operative hæmatemesis*, due to the failure to occlude bleeding vessels in the stomach or intestinal wall, is all but unknown to me, since I rarely, if ever, employ clamps. Indirect operations for peptic ulcer of stomach or duodenum may lead to hæmorrhage from the original ulcer which is preferably dealt with by excision or exclusion. A fatal bleeding may take place from such a source, unless surgical reintervention is employed.

*Hæmorrhage from anastomotic ulcers.*—If these are complicated by severe hæmorrhage, the rules governing the treatment of peptic ulcers of stomach and duodenum should control the surgeon in this class of case. Amidst the anxieties of a complex artificial pathology, if urgent operation should be required or undertaken, the least possible should be done at the time; hæmostasis alone is to be secured.

## Conclusion

It may still be long before physician and surgeon see absolutely eye to eye as to the necessity and as to the appropriate moment for operative interference; but I have no doubt whatever that ultimately the internist will become more alive to the menace of disaster which threatens the patient, and will become more surgically minded towards these cases than he may be at the moment. Until the arrival of the day when the department of medicine shall cure all ulcers, this valuable method of resuscitation should give the physician the same confidence in the power of surgery to deal successfully with hæmorrhage of an ulcer as with that of an ectopic gestation.

There is one danger that I foresee from continuous drip-transfusion: its very success in at least temporarily arresting hæmorrhage may lead to vexatious delay and to ill-judged postponement of obvious operation, until a time when the patient is worn out by the hope that is deferred, his tissues poisoned by morphia, his biochemistry altered by the starvation enjoined for the arrest of the bleeding, and his

cough-reflex abolished by hypnosis: by then all is ready for an impending low-grade pneumonia which will carry him off. When surgery is finally demanded as "un dernier ressort," is it little wonder that fatality ensues?

Increasing experience confirms the cherished conviction that the continuous blood-drip, aided by appropriate and timely surgery, is solving the ulcer-hæmorrhage problem and rationalising the treatment of these anxious cases, which have hitherto so frequently dismally disappointed the all-too-sanguine expectations of a futile and complacent inactivity; to this inert policy I was myself for a time idly, hopefully, disastrously partisan. Finsterer's "first forty-eight hours" is still the optimum period for surgical attack in hæmatemesis, and the golden age of gastric surgery will have been attained only when all cases of hæmorrhage from chronic ulcer come to operation within that space of time.

Let there be no procrastination, for delay is fraught with peril; early enterprise is the prelude to success.

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## AN OUTBREAK OF SCABIES IN A MENTAL HOSPITAL


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THE problem of scabies in an institution has certain distinctive features. On the one hand, disinfection of all individual bedding and clothing is readily accomplished; the patients, moreover, are under constant observation and one can readily satisfy oneself that any treatment prescribed is carried out in detail. On the other hand, there is the wide range of dissemination from the undetected scabetic through accidental interchange of clothing and bedding, and the impracticability of treating all such possible contacts—as one can in the small family—as if they were actually infected.

In the mental hospital there are two further difficulties. The patients rarely complain of any discomfort and thus do not come forward for treatment; and, secondly, with a few exceptions, they do not coöperate. Not a few patients are actively hostile and resistive to any sort of attention; and the difficulty of applying any treatment which depends upon the opening-up of all burrows need not be stressed. Below is given briefly an account of an outbreak of scabies in the chronic female block of Wakefield Mental Hospital, comprising 12 wards and containing some 650 patients.

It may be mentioned here that the particular technique of sulphur ointment treatment followed was that recommended by Sequeira [1] of three rubbings with soft soap, three baths with thorough scrubbing, and three liberal applications of unguentum sulphuris B.P. at intervals of 24 hours. The only detail omitted was the use of gloves and stockings after the application of the ointment. Clothing and bedding were autoclaved.

### HISTORY OF THE OUTBREAK

The position at the end of April, 1934 (when I took over the charge of the block), was that of the dozen or so cases of scabies which had appeared in four separate wards since the beginning of the year, all had been energetically treated with sulphur-potash baths and sulphur ointment for periods of a week or more and were regarded as cured.

Early in May a patient was reported to have a rash, and examination showed well-advanced generalised scabies. Microscopical examination of a scraping revealed the sarcoptes. The patient was isolated in bed and the routine sulphur ointment treatment given. The following day the limbs of all the other patients in the ward were systematically examined. Two clinically certain and four doubtful cases were found. All six were isolated and treated. During the next few days all previously suspected or treated cases were thoroughly examined, and wherever a suspicious case was found the limbs of all other patients in the ward were examined without delay. All cases, whether certain scabies or only doubtful, were submitted to the routine treatment.

In this way some 30 cases were netted and isolated. Treatment was repeated at fortnightly intervals in all cases which appeared clinically to be still active and which showed, in addition, the sarcoptes or unhatched eggs in scrapings from the burrows. Isolation in bed was maintained for a week after all suspicious lesions had disappeared.

After about a month had elapsed it became apparent that while nearly all of the "doubtful" cases had cleared up hardly any of the clinically "certain" cases had done so, and not one of the cases in which microscopical evidence of the parasite had been found showed any permanent improvement; nor did stricter supervision of the treatment and the opening-up of all visible burrows with the scalpel give results commensurate with the time and energy expended.

The position in July can be summed up as follows: of ten cases in which the diagnosis had been confirmed microscopically not one had been cured by two courses of treatment. Five had been cured after 3, 3, 3, 4, and 5 courses respectively, while five remained active after 2, 2, 3, 3, and 5 courses respectively.

Treatment was now tried, tentatively at first, using a combination of sulphur and turpentine. The latter was chosen for the reason that it is capable of holding sulphur in solution and that it penetrates the skin.[2] It had the further recommendation that it is itself used as a parasiticide (for ringworm).[2] The application finally used (referred to as S.T.P.) was prepared as follows:

> Thirty grains of sublimed sulphur were melted in a wide test-tube. To this, small quantities of oil of turpentine B.P. were added, well boiled, cooled by the addition of more turpentine, and decanted. This process was repeated until all the sulphur was dissolved, 6 fluid ounces of turpentine being used, and the volume made up to 8 fluid ounces with liquid paraffin B.P. The resultant preparation of sulphur, turpentine, and paraffin is a clear deep amber fluid with a pungent odour. The percentage of sulphur dissolved in the turpentine is about 1 per cent. If more is dissolved it crystallises out on cooling.

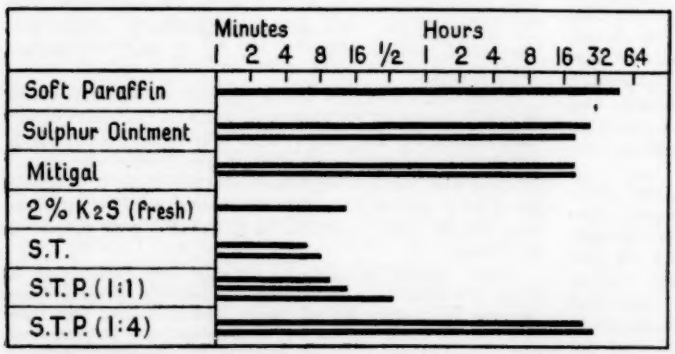
The three-day scheme of treatment, using S.T.P. in place of sulphur ointment, was adhered to, commenc-

ing with a single bath and scrubbing. Later this was found to be unnecessary and no attempt was made to open up burrows beyond that required for diagnostic purposes. In view of the observation made that vesicles will continue to form—apparently as irritative phenomena from fragments of sarcoptes left in the skin—the treatment, whenever possible, was completed with one or more baths and scrubbings to get rid of the dead parasites.

It soon became evident that S.T.P. was a more effective medicament than sulphur ointment, and had the initial netting of infected patients been complete the outbreak would rapidly have ended. As it was, in addition to one or two cases drafted from another block, fresh cases appeared both in the wards previously infected and in others. (This last fact is not surprising in view of the severe overcrowding, and the fact that structural defects of the block necessitate the constant intermingling of one ward with another.) The chief problem was no longer the treatment of the individual but the netting of the cases as yet undetectable. To do this, whenever scabies appeared the "hands and feet" examination of the ward was repeated at fortnightly intervals until two consecutive examinations were negative. Treated patients were re-examined more thoroughly and over a longer period. In this manner, after several phases of premature optimism, the outbreak was gradually quashed, the last four cases appearing in the early months of 1935. Doubtful cases should, of course, have been treated; but in view of the experimental nature of the treatment this was withheld until the disease was confirmed microscopically.

Many of the cases netted by systematic examination were very early ones. On the other hand, cases appearing in a ward not yet "scabies-minded" were often remarkably extensive, and this was particularly so in the wildly excited and resistive cases. Of 23 patients treated, 9 were cured after one course of treatment, 10 were cured after two courses. Of the remaining 4, 3 were cured on the third course and the other was treated and cured with Mitigal after the second failure of S.T.P. One other case was cured with mitigal after failure with sulphur ointment, the choice of treatment being determined by the presence of a severe eczema of the legs.

Unpleasant results appear to have been confined to the appearance in two of the earlier cases of a crop of indolent boils. This was attributed to vigorous rubbing, which was subsequently avoided. Wherever possible the patient's urine was tested both before and after treatment, which was not intended for any case with kidney disease; but no such case was discovered, nor did any patient show albuminuria subsequently.




Survival times of sarcoptes in various media (logarithmic scale).

It is worth noting that of the total 29 patients, 13 exhibited scabetic lesions of the palm or sole. Of further interest is the fact that only one patient complained of itching, although several admitted this when questioned. One patient, an intelligent but depressed post-encephalitic, complained not of itching but of general ill-health. She was examined and found to have generalised scabies.

*Table showing Survival Times of Adult Female Parasites in Different Media*

| Medium. | Number of experiments. | Viability. |
|---|---|---|
| Soft paraffin B.P. .. | 1 | 44 hours. (46) |
| Sulphur ointment B.P. .. | 4 | 5 (18½) 11 (20½) 18 (18) 26½ hours. (28) |
| Mitigal .. .. | 4 | 4 (6) 6½ (17½) 18 (19) 18½ hours. (21) |
| 2 per cent. $K_2S$ (fresh) | 2 | 10 (13) 12½ min. (15) |
| 2 per cent. $K_2S$ (stale) | 1 | 70 min. (Sarcoptes lost.) |
| S.T. .. .. | 3 | 5 (5) 5½ (5½) 7½ min. (7½) |
| S.T.P. (1 : 1) .. | 5 | 4 (5) 5 (6) 9 (11) 12½ (17) 30 min. (33) |
| S.T.P. (1 : 4) .. | 3 | 2½ (3½) 20½ (21½) 27 hours. (29½) |

2 per cent. $K_2S$ = 2 per cent. solution of sulphurated potash in water.
S.T. = 1 per cent. solution of sulphur in oil of turpentine B.P.
S.T.P. (1 : 1) = equal parts of S.T. and liquid paraffin B.P.
S.T.P. (1 : 4) = one part of S.T. to four parts liquid paraffin B.P.

## EXPERIMENTAL OBSERVATIONS

The examination of the effect of various substances on the isolated living sarcoptes was suggested by the chance finding, in a scraping from a patient already under sulphur ointment treatment, of a vigorously active parasite completely embedded in sulphur ointment when the scraping was examined an hour or so after it had been obtained. From this time on, whenever a favourable case presented itself, examinations were made at the bedside on the living sarcoptes immediately after its capture from the patient. The parasite was at once mounted on a slide in the medium chosen, without any coverglass, and examined under a low-power microscope. All but those which showed active movement at room temperature or on slight warming were discarded, and except for an occasional careful warming in the prolonged experiments (to supply evidence of continued life) all the experiments were carried out at a constant room temperature of between 60° and 70° F.

Considerable variation in vitality in a given medium was found, depending possibly upon the age of the parasite, but in spite of this a significant difference in viability in various media was found. The accompanying Table gives the observed viability of adult female parasites. For each medium the upper row of figures gives the time to the last observed sign of life, while the lower row gives the time to the observation of death. Any muscular movement, whether of

limb, jaw, or internal muscles, was regarded as a sign of life. Where observation was continuous the last observed movement was taken as the time of death.

If the survival times of the most viable examples in each medium are represented (roughly) on a logarithmic scale, giving the times between 1 minute and 64 hours, the results shown in the Figure are obtained.

No comparative experiments on the viability of the eggs were carried out. The following observations, however, are worth recording.

Eight eggs were captured and embedded in a film of sulphur ointment. They were left for four days at a temperature of about 60° F., at the end of which time four of the eggs were found to have hatched out, the larvæ having escaped.

Two eggs showing little differentiation of their contents were embedded in sulphur ointment. Each day they were put in an incubator at 100° F. for five minutes. One egg showed no further change. The other, on the fourth day, showed the distinct outline of the developing embryo. On the fifth day development appeared complete and slight warming resulted in repeated movements of the jaw. Hatching did not occur and on the following day there were no signs of life.

### COMMENTARY

The object of this paper is to stress the inadequacy of sulphur ointment in the treatment of scabies rather than to advocate a new treatment which is far from ideal. It is not suggested that the experimental results with isolated parasites are strictly parallel with the activity of the medicaments concerned when applied to the skin; and in this connexion it should be mentioned that mitigal, which figures badly in the experiments, has been in the few cases in which I have tried it and in the experience of my colleagues an efficient preparation in the curing of scabies. In view, however, of the dogmatic optimism to be found in text-books of dermatology with regard to the treatment of scabies by sulphur ointment, the following of the recorded observations may well be emphasised:

Out of ten certain cases of scabies in mental patients not one was cured by two courses of sulphur ointment treatment.

A total of 33 courses of treatment resulted in five cures and five failures.

At room temperature an adult female sarcoptes will survive complete embedding in sulphur ointment for 24 hours.

At room temperature the eggs will survive and continue to develop for four days in sulphur ointment, and it does not prevent the larvæ hatching out. On the other hand, sulphur ointment is more lethal for the sarcoptes than Vaseline, killing the parasite in half the time.

Two per cent. sulphurated potash in water is markedly toxic for the parasite, but loses its potency if allowed to become neutralised by the carbon dioxide of the atmosphere. This fact prevented any satisfactory experiment with the reagent at the strength of the sulphurated potash bath as usually prescribed (i.e., about 1 in 1500).

Clinically S.T.P. (sulphur, turpentine, and paraffin) has been disappointing. Apparently potent when applied directly to the parasite at a concentration which caused little or no irritation to the skin, it frequently failed to cure the patient even when given as quite liberal applications on three successive days. On the other hand, for a certain type of patient it is undoubtedly superior to sulphur ointment. The treatment may be repeated the following week without ill-effect, and this course is probably advisable in any well-established case. The preparation is simple and cheap, and the opening-up of burrows, although doubtless of benefit, is not an essential factor in the treatment.

I wish to thank the medical superintendent, Dr. C. J. Thomas, for his permission to publish these results, and my colleagues for their interest and help. I should also like to compliment the nursing staff on its coöperation in somewhat trying circumstances.

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## ANÆSTHESIA BY CLOSED METHOD

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Disrepute has been brought upon the closed method of anæsthesia by excessive emphasis on its economy. It is certainly economical, but its importance lies in the exact and rational use that can be made of that hormone of the respiratory system, carbon dioxide.

### USE OF THE SODA-LIME CANISTER

Failure to realise that economy is not the whole story has led to the adaptation of a soda-lime canister, often of faulty design, to a machine which has been designed for open anæsthesia. The result of this can only be a makeshift, often physiologically incorrect and therefore unsatisfactory. Closed anæsthesia is, as a result, condemned, although the real fault lies in an incorrect physiological design which renders a sound principle ineffective.

In order to apply the chemical principle of the absorption of carbon dioxide by soda-lime, a closed system of respiration is essential, and in such a system two factors must be fulfilled: (1) the carbon dioxide of each expiration must be completely absorbed; (2) the volume of oxygen used at each inspiration must be replaced by the introduction of a corresponding volume of oxygen.

One may employ a single-phase or a two-phase circuit of breathing. In the single-phase circuit, which is in effect an ebb-and-flow arrangement, the soda-lime canister is set between the mask and the bag. Breathing is from mask to bag and from bag to mask. One breathing tube is used and the direction of the air stream changes with inspiration and expiration. Both the inspired and the expired air are subjected to the resistance and chemical action of the soda-lime. In the two-phase circuit the expiratory and inspiratory phases run in the same direction. An expiratory and inspiratory one-way valve directs expiration from the mask through the soda-lime to the bag, whereas the inspiratory phase runs direct from the bag to the mask. Either circuit can be designed according to correct physiological principles, but the two-phase circuit makes it easier to combine correct physiological with convenient mechanical principles, and a more flexible unit is possible.

Volatile anæsthetic agents are excreted by the lungs almost completely, and in exactly the same form as that in which they were absorbed. In a closed system, therefore, the same amount of anæsthetic may be cleansed and used again and again. In designing such a system five factors are of importance: (1) the system must be airtight; (2) resistance to breathing must be reduced to the smallest possible proportions; (3) the absorptive properties of the soda-lime must always be active; (4) artificial dead

space must be reduced to the smallest possible volume; (5) the oxygen supply must be fed into the system in such a manner as to be easily adjusted and readily available.

*Airtightness.*—If an endotracheal tube is used with adequate packing no difficulty is experienced in rendering the system airtight. A mask accurately adjusted and held in position with Clauson's harness will almost invariably make an airtight joint. A method of neutralising a slight leak between the mask and the face will be mentioned later.

*Resistance to breathing.*—There are three possible sources of resistance: (1) The weight and resistance of the expiratory and inspiratory valves, which can readily be reduced to a minimum. (2) The design of the canister and the size of the soda-lime granules employed; the smaller the granules the greater will be their absorptive powers but the greater will also be their resistance to breathing. Since the size of the canister is of little moment one can afford to increase the size of the granules to that mesh which provides efficient absorption and at the same time gives least resistance to breathing; using my form of divided canister, that known as 6–10 mesh, is most satisfactory. (3) The ether reservoir; if this is designed on the carburettor-wick principle resistance is very slight and is of little importance, because it is in circuit for such short periods of time. The total resistance to breathing in the machine I use is 2 mm. of Hg.

*Absorptive properties of the soda-lime.*—If the anæsthetist uses Siebe Gorman's Green Protosorb in a glass canister he can determine the integrity of the charge of soda-lime at any period, since it changes in colour from green to grey-brown when its absorptive properties have become depleted. In a two-phase circuit the flow through the canister is in one direction only, and he can therefore follow colorimetrically the gradual depletion of the canister contents from entrance to exit as the anæsthetic proceeds. If the divided canister is used as soon as the soda-lime becomes depleted the canister can be by-passed, recharged, and replaced. The use of coloured soda-lime and the possibility of recharging the canister during the anæsthetic makes the chance of inefficient absorption very remote.

*Dead space.*—On the question of dead space hangs the flexibility and physiological integrity of this method of anæsthesia. The normal volume of tidal air is 500 c.cm. and the normal volume of respiratory dead space is 140 c.cm. The difference between these two values—i.e., that volume of the inspiratory air which actually reaches the lung alveoli and can take part in respiratory exchange—is 360 c.cm. This will be referred to as "efficient lung ventilation."

| Tidal air. 500 c.cm. | Minus | Dead space. 140 c.cm. | Equals | Efficient lung ventilation. 360 c.cm. |
|---|---|---|---|---|

The volume of efficient lung ventilation can be reduced in two ways: (1) by reducing the volume of tidal air; (2) by an artificial increase in the volume of dead space. The factors which reduce the volume of tidal air and the methods of correcting them are common to both the open and the closed methods of anæsthesia. The problem of artificial increase of dead space applies particularly to closed anæsthesia. It is easy to visualise an increase of artificial dead space which would reduce the volume of efficient lung ventilation to zero. In such an event the protective respiratory reflex would effect a compensation to the extent of 1500 c.cm., the volume of complemental and supplemental air; but if the volume of artificial dead space were increased beyond 3000 c.cm. no amount of compensation could render efficient lung ventilation possible. It may be objected that machines are to be seen whose artificial dead space ranges up to, and even exceeds, 3000 c.cm., and that they function. This is true; even in the face of such a huge dead space, an apparently insuperable obstacle, respiratory exchange can be effected. However great the volume of artificial dead space between the lung alveoli and the source of supply, gaseous equilibrium will eventually be reached between the two, by the physical process of diffusion of gases, but before this equilibrium has been reached the patient will have experienced a period of respiratory discomfort, depending in duration and severity upon the volume of artificial dead space present. It is essential, if physiological principles are to be reproduced, that the volume of artificial dead space be reduced to the smallest possible proportions. The greater the volume of efficient lung ventilation, the more flexible will be the method, and since, in anæsthesia, everything is conspiring against the maintenance of a large tidal air volume, it is the more imperative that artificial dead space be kept as small as is mechanically possible.

As rebreathing plays such a part in the administration of gaseous anæsthetics in the open methods, what will be the effect of reducing the volume of artificial dead space to zero? The body has no difficulty, in the presence of an adequate supply of oxygen, in maintaining a normal alveolar carbon dioxide content in the presence of an atmosphere containing no carbon dioxide at all. Increased lung ventilation, with consequent fall in alveolar carbon dioxide content, produces apnœa which will continue until alveolar carbon dioxide is raised to normal physiological limits when, in the presence of an adequate supply of oxygen, breathing will be resumed without periodicity. But because of the depressing effects of anæsthetic agents, because of the toxic and shocked condition of many anæsthetised subjects, it is not wise to depend upon the body's protective reactions, but rather to use the stimulating action of added carbon dioxide whenever it is clinically indicated. By means of a by-pass on the soda-lime canister the carbon dioxide content of the system can be rapidly and readily built up to the desired level without upsetting the physiological balance. There is no reason, therefore, if a by-pass is provided on the canister, why the volume of artificial dead space should not be reduced to zero. It is imperative, in a closed system of anæsthesia, that artificial dead space be reduced to the smallest possible proportions, and that a by-pass be provided on the canister for the therapeutic use of carbon dioxide.

*Oxygen supply.*—Once anæsthetic equilibrium has been attained at the depth required, the metabolic rate of the patient is almost constant and the patient's blood is in gaseous equilibrium with the contents of the closed system. The pressure in the system at this point, as read on the manometer, is a numerical index of the depth of anæsthesia, and if this pressure is kept constant the level of anæsthesia will remain stationary. Anæsthetic agents are excreted almost completely and in exactly the same form as that in which they were absorbed. Consequently no loss of pressure will result as far as they are concerned. Because the system is closed it is essential that the carbon dioxide of each expiration should be completely absorbed by the soda-lime, and that the volume of oxygen used with each inspiratory effort should be replaced by the introduction of a corresponding volume of oxygen. The absorption of the carbon dioxide will cause a fall in pressure in the closed system, but because the metabolic rate is constant, the output of carbon dioxide, and the consequent fall in pressure due to its absorption, will be a constant fixed value. The volume of oxygen necessary for replacement will therefore be that amount which will neutralise the fall in pressure caused by the absorption of carbon dioxide. It will also be a constant fixed amount. Having attained anæsthetic equilibrium, the amount of oxygen necessary to maintain the partial-pressure constant will be the greatest amount that will not cause a rise in pressure in the closed system. This amount of oxygen will be the correct volume only if it is fed into the system in such a manner that it is all available with each inspiratory effort. The possibility of oxygen being backwashed and remaining in the system to dilute the anæsthetic contents must be averted. This is achieved if the oxygen is fed into the inspiratory flow of a two-phase circuit as near the mask as possible, a method which allows of a rapid and minute control of oxygen, with ease of adjustment, and which, in an emergency, makes it possible to deliver oxygen direct to the patient.

These five factors are the bare essentials which must be satisfied if a closed system of anæsthesia is to conform to correct physiological principles. An additional principle presents itself, which while not essential to the success of the method makes for ease

of control. With the patient in anæsthetic equilibrium, the oxygen inflow adjusted, the carbon dioxide being absorbed, and the system efficiently closed, the third factor, the partial pressure of the anæsthetic agent in the system will also remain constant and the depth of anæsthesia will consequently be maintained at a fixed level. The pressure in the system is lowest on inspiration and highest at expiration. One must take the inspiratory pressure as the true or actual pressure at which one is working, and the difference between this and the expiratory pressure as simply a measure of the amplitude of respiratory movement. If a slight leak occurs—the junction of the mask with the face is the only probable site—the pressure in the system will gradually fall and the depth of anæsthesia will gradually lighten. The leak, when present, occurs during expiration when the pressure is greatest. This is important because the gases to be lost are then chiefly carbon dioxide and anæsthetic agents. If the leak occurred during the inspiratory phase the oxygen regulation would be seriously interfered with.

The loss of carbon dioxide during expiration is of little moment, for it must be excreted and it does not matter whether it is absorbed by the soda-lime or lost into the atmosphere. The loss of anæsthetic agent is of great importance; it must be replaced if the depth of anæsthesia is to remain steady. A lever system controlling the flow of anæsthetic agent from the source of supply to the bag will achieve this object. The screw adjustment can be set to allow anæsthetic agent to flow into the system only when the pressure falls below the predetermined inspiratory pressure. By this means the lever system will automatically allow just so much anæsthetic agent to flow into the closed system as has been lost by the leak, and the pressure of anæsthetic agent is maintained at any predetermined pressure. A machine so designed will conform to correct physiological principles, and once adjusted to the depth of anæsthesia required will regulate itself with the same flexibility as any open anæsthetic machine.

## GENERAL CONSIDERATIONS

Inferior samples of soda-lime contain an excessive amount of caustic and as a result cause a dry mouth and throat, and even tracheitis. They may also pulverise to form a fine alkaline dust which causes an irritating cough during induction. I find that this annoying complication is eliminated only when I use Siebe Gorman's protosorb. Protosorb becomes harder on use and does not cause excessive dehydration. After an anæsthetic of one hour's duration 3–4 drachms of water will be found in the bag of my machine, its most dependant part. This saturated water vapour content of the system is beneficial. In filling the canister an air space should be left above the soda-lime on the inlet side to enable the gases to spread out and so diffuse evenly throughout the canister contents.

The use of an outside source of carbon dioxide is neither necessary or desirable; the by-pass on the canister will provide all that may be required. The chemical action of carbon dioxide on soda-lime generates heat. An outside source of carbon dioxide will waste the soda-lime and generate excessive heat. By its use temperatures of up to 45° C. have been registered in the canister. When the by-pass was used to obtain carbon dioxide, even with excessive respiratory effort the temperature has never exceeded 38° C., and, with the bag and the length of the inspiratory phase to act as distributors of heat, the temperature in the mask has never exceeded 37° C. The heating of gases is adequate but not excessive if the by-pass is used. The alkalinity and filtering action of the soda-lime renders the system bacteriologically sterile, and the closed system makes the possibility of anæsthetic explosions very remote.[1]

The economy is striking. Anæsthetic agents are lost only during induction when the system is open in order to eliminate nitrogen. From this time onwards the replacement which may be necessary due to leakage is very small. During two operating days at St. Peter's Hospital, the measured quantities used for twelve cases, two of which were short open anæsthetics, were:—

| | | |
|---|---|---|
| Nitrous oxide .. .. | 100 gals. | 5*s.* 8*d.* |
| Oxygen .. .. .. | 120 ,, | 5*s.* 0*d.* |
| Ether .. .. .. | 16 oz. | 5*s.* 0*d.* |
| Soda-lime .. .. | 5½ lb. | 6*s.* 6*d.* |

This is equivalent to a cost of 1*s.* 10*d.* per anæsthetic. Using 6–10 mesh, my canister takes a charge of ¾ lb. of soda-lime, which is sufficient for an anæsthetic lasting from one to one and a half hours, depending on the patient's metabolic rate.

## CLINICAL FACTORS

The accompanying Figure is a diagrammatic representation of the two-phase circuit. There is a clear-cut expiratory phase from the mask to the bag with the soda-lime in series. This ensures that the bag will contain oxygen and anæsthetic agent at the pre-

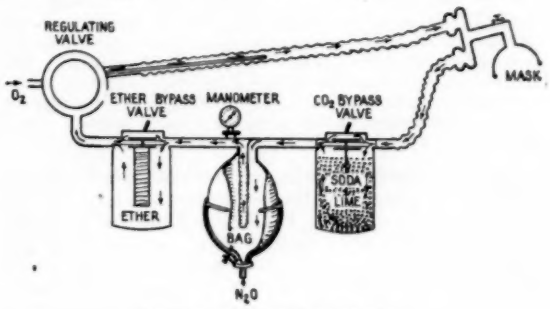


Diagram of the closed circuit.

determined pressure, plus just that amount of carbon dioxide which has been determined by the use of the by-pass. The inspiratory phase is straight from the bag to the mask, picking up its quota of oxygen necessary for replacement high up in the inspiratory flow. An ether reservoir and a gas-regulating valve are set in series. The contents of the bag and the incoming oxygen are communicated to the patient with the very next inspiration as the volume of efficient lung ventilation is as high as possible, and thus control is very flexible. The machine I use has four controls: a valve regulating the proportions of nitrous oxide and oxygen; a carbon dioxide absorber, which can be turned on or off; an ether control which can be turned on or off; a pressure-adjustment screw to regulate the pressure, with a manometer and an expiratory valve on the mask.

Induction is invariably carried out with nitrous oxide irrespective of what sequence is to follow. With the expiratory valve on the mask open and the soda-lime by-passed the machine is a simple open apparatus.

The oxygen and nitrous oxide having been turned on at the source of supply, the mask is applied and the

[1] Harris, T. A. B.: Brit. Med. Jour., 1933, ii., 1203.

regulating valve turned to full nitrous oxide. As induction proceeds oxygen is cautiously added with this regulating valve. After 10 to 15 expirations the nitrogen which was present in the machine and the pulmonary system has been excreted through the expiratory valve on the mask. An airway is inserted, the mask accurately adjusted and fixed with Clauson's harness, and the machine is closed by shutting tightly the expiratory valve on the mask. Should carbon dioxide be required to hasten induction the carbon dioxide absorber valve is left in place, and when this has been achieved it is turned to the "on" position and the absorption of carbon dioxide begins. The pressure is then adjusted by means of the screw on the lever system to the clinical requirements, and the oxygen inflow accurately controlled by means of the regulating valve to an amount which will not increase this predetermined pressure. Ether is added if relaxation is needed. The pressure and the amplitude of respiratory movement are noted for future reference. From this time onwards nitrous oxide is regulated by the lever system, oxygen is regulated to the patient's metabolic rate, and carbon dioxide absorption is complete.

**Most information is gained from the manometer. A rise in pressure can be due to two causes.**

(*a*) The inefficient absorption of carbon dioxide. There is no excuse for this occurring, for the change in colour of the protosorb in the glass canister gives ample warning. Should it occur the expiratory valve on the mask is opened and the carbon dioxide absorber valve is turned to the "off" position, when the canister can be removed, recharged, replaced, the system closed again and absorption recommenced.

(*b*) If the soda-lime is efficient then a rise in pressure will be due to a too great supply of oxygen. More oxygen is being supplied than is necessary for replacement. The oxygen supply must be reduced by the regulating valve until the pressure as recorded on the manometer returns to its predetermined reading or the colour begins to fail, when the oxygen supply is more carefully adjusted.

The amplitude of swing of the manometer needle tells of the activity of the respiratory centre. Should the amplitude of swing fall below 3 mm. of mercury the carbon dioxide absorber valve is turned to the "off" position, when carbon dioxide rapidly accumulates in the system with the desired clinical result. It is important to keep respiratory movements within normal limits. A reduction of respiratory movement means a depressed respiratory centre, but in addition this diminution of movement hinders the efficient filling of the right heart, and cardiac output is reduced with a fall of blood pressure which materially embarrasses an already depressed respiratory centre. Depth of anæsthesia can be rapidy lightened by reducing the pressure in the system, this reduction can be made delicately if the manometer is referred to during the adjustment. Anæsthetic equilibrium having been reached at the depth required the machine will regulate itself and the manometer will, in the presence of a clear airway, give the exact and adequate information necessary for the protection of the patient.

Should the anæsthetic be prolonged, or the patient be a poor subject, the complication of an altered susceptibility appears. This ranges in relative intensity, from mere depression of the respiratory and cardiovascular systems to established surgical shock. Depression, as indicated by the irregular or reduced amplitude of respiratory excursions, is countered by an increase in the carbon dioxide content. It is necessary to overcompensate, but when the increased breathing returns to normal the body will maintain the correct physiological alveolar carbon dioxide content for some considerable time. The continuous by-passing of even small amounts of carbon dioxide is incorrect, but as the depression becomes more intense the anæsthetist will make more frequent use of the by-pass valve and may even decrease the pressure in the system. As the depression increases in degree, in addition to the use of carbon dioxide, he will have to increase the supply of oxygen. Thus as anæsthesia proceeds two states preceding shock can be recognised, one of which carbon dioxide will hold in check, and the second which requires, in addition to carbon dioxide, an increase in the oxygen supply. If these states are recognised comparatively early, this technique will arrest their onset.

When, however, the exhibition of carbon dioxide and excess of oxygen fail to relieve the condition, surgical shock is definitely established. The patient's susceptibility to anæsthetic agents is definitely raised, and one must reduce the pressure in the system—that is, reduce the partial pressure of anæsthetic agents or the anæsthetic contents of the system—and take the necessary therapeutic measures to counter this shock. The clinical condition of shallow and irregular breathing, inspiratory tugging, a fall of blood pressure, and a soft and rapid pulse may indicate three errors: (1) respiratory depression due to faulty absorption of carbon dioxide; this is readily diagnosed; (2) a bad airway; by listening with the breathing tubes held close to the ear one can easily determine this fault; (3) nitrogen in the system; if the expiratory valve on the mask is opened for 10 to 15 expirations any nitrogen present will be excreted. If, after these manœuvres, this syndrome is not relieved then advanced surgical shock is established.

An increase in pressure in the system when nitrous oxide and oxygen alone are being used will increase depth of anæsthesia only within narrow limits, but if a lipoid soluble anæsthetic is employed it offers a very effective means of increasing depth. At the same time I do not consider this to be the method of choice; I believe that the smallest satisfactory pressure is the correct one, and work usually at from 4 mm. to 7 mm. of mercury. Carbon dioxide is used only when it is clinically indicated, and not more or less empirically, as in open anæsthesia. It is my impression that the excessive use of this powerful respiratory stimulant in open anæsthesia is responsible for the unwarranted shock which sometimes follows a $N_2O$ oxygen anæsthetic. By the use of constant rebreathing one is in effect "whipping a tired horse." In closed anæsthesia, on the contrary, with a machine of correct physiological design, carbon dioxide is used only as the clinical condition of the patient indicates. The anæsthetic which results is smooth, with quiet breathing, and one is struck by the pink colour which it is possible to maintain throughout. Relaxation is achieved with a minimum of toxic anæsthetic agent, and recovery is consequently rapid and can be materially hastened by a reduction of pressure and the use of carbon dioxide.

In my opinion, if the physiological principles outlined above are satisfied, the anæsthetic which results will be more physiologically correct than it is possible to achieve with open methods. Heat loss is at a minimum, the water vapour content is always saturated, cyanosis should never occur, and, because the oxygen supply must always be adequate if the system is to function, relaxation is attained with a minimum of toxic anæsthetic agent the elimination of which is correspondingly rapid, so that the patient's cough reflex is almost always present before leaving the theatre. Moreover, a machine fulfilling these conditions is flexible to manipulate.

# TREATMENT OF COLLES'S FRACTURE

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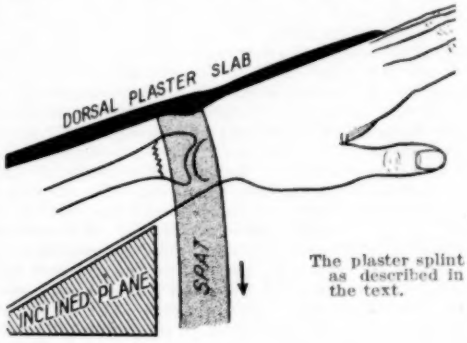
Briefly the principles of treatment of Colles's fracture are reduction, fixation of the fragments, and early active movements of the fingers. Reduction is usually effected either by the shaking-hands method or by the method of Robert Jones. The position in which the wrist-joint should be fixed has been much discussed and in this country one of two positions is commonly employed.

In the first a Carr's splint is applied, the wrist-joint being slightly dorsiflexed; in the second, the wrist is held in a position of plantar flexion and ulnar deviation, usually by the application of a plaster splint. When a Carr's splint is used, unless the fracture happens to be one in which the reduction is stable, the displacements are liable to recur. Moreover Carr's splint is a clumsy piece of apparatus, and though the patient can move his fingers that is the utmost he can do with the affected hand. When the wrist is fixed in full flexion and ulnar deviation the displacements are unlikely to recur as long as this position is maintained, but active movements of the fingers are very difficult. Another and more serious drawback to this position of the wrist is that it may sometimes result in a median neuritis.[1]

Böhler's method of treating Colles's fracture consists of reduction by steady manual traction in the long axis of the forearm and fixation of the fragments by an unpadded plaster splint with the wrist-joint in such a position that the dorsa of the hand and of the forearm are in a straight line. This allows free movement of the fingers and the patient can use his hand, but a consideration of the anatomy of the capsule of the wrist-joint and of its ligaments will show that by this method complete restoration of the normal anatomy of the radius is impossible. The best result obtainable is that the distal articular surface of the radius is at right angles to the long axis of the forearm. In spite of this it is a better method than either of those previously described, as secure fixation of the fragments is effected, the patient can still carry out active movements of the fingers, and can use his hand from the very beginning of treatment.

Acting on the belief that accurate re-position of the fragments was essential, and bearing in mind the importance of early active movement, a method was devised to secure both those objects. The patients were fully anæsthetised by open ether. Reduction of the fracture was effected by the shaking-hands method, with care to make sure that the lower fragment was disimpacted. The problem then was to keep the lower fragment accurately in position while applying a plaster splint which would fix the wrist-joint with the dorsum of the hand and of the forearm in line. This was solved by the use of a spat as follows:—

A loop of 1½ in. bandage was placed over the forearm so that it rested over the lower fragment. Into the rest of the loop, which should be almost but not quite long enough to reach the floor, the operator placed his foot. The fully pronated forearm was then supported on an inclined plane, made of two or three small sandbags, which rested on a small table level with that on which the patient was lying and placed alongside it. The fingers were gently pulled upon by one hand of an assistant, so as to keep the wrist-joint in the position previously described, while with his other hand the assistant held down the forearm near the elbow. By gentle pressure with his foot in the loop of bandage the operator maintained the corrected position of the lower fragment while the splint was being applied. This was an unpadded plaster splint and consisted of a dorsal slab, extending from the level of the knuckles to just below the elbow-joint, held in place by a circular plaster bandage. The wrist-joint was included in the plaster and the hand fixed to the dorsal slab by a strip of plaster which crossed the palm of the hand obliquely so as to allow full flexion of the metacarpo-phalangeal joints. The forearm was of course lifted by the assistant while the circular bandage was being applied. The essential point of the technique is that moulding of the plaster round the lower end of the forearm and the wrist-joint should be accurately carried out; in particular the plaster should fit well into the depression produced by the spat, on the dorsum of the wrist-joint. As soon as the plaster had set the bandage was cut off close to the plaster. A glance at the diagram will illustrate the points mentioned. Two 4 in. plaster bandages 3 yards long were used to make the splint. When swelling of the wrist was so marked as to cause anxiety, the patient was kept under observation for




The plaster splint as described in the text.

24 hours after the application of the plaster, the limb during this time being elevated. X rays were taken before and after reduction, and an X ray should be taken at the end of a week to see whether the fragments are still in position, as in those cases in which considerable swelling is present when the plaster is applied, slipping of the fragments is apt to occur as the swelling subsides and the plaster become slack. Should this have occurred it is not yet too late to re-correct the fragments and apply another plaster. Active movements of the fingers and the use of the hand were encouraged from the start of treatment and massage was not employed.

Nine patients, all women, six of whom were over 60 and the remaining three 45 years or over, were treated during January–June of 1934. They were asked to come to hospital to be examined in January of this year. Six of them did so, two did not reply, and one wrote in reply to the follow-up letter. In three cases the lower fragment was found to have slipped back. This was discovered in two of these when X rays were taken 18 days and 9 days respectively after the application of the plaster. In both there had been an interval—four days in one case and three days in the other—between the fracture and the reduction, and there was considerable swelling of the wrist-joint at the time of reduction. The third case had the following history:—

F.74. Fracture 15/2/34. Reduced 16/2/34. Plaster changed two weeks after reduction and taken off altogether a week later. She was discharged a week later—i.e., four weeks after the fracture—with full movements of the fingers and wrist, except for 20° limitation of full extension and slight limitation of supination. She was seen 11

[1] Cabot and Saunders: Surg., Gyn., and Obst., 1933, lvii., 507–516.

months later and X rayed. The function of the hand was good, the grip was equal to that of the opposite hand, she had no pain in the wrist, and there was slight limitation of flexion and supination. The X ray showed that the lower fragment had rotated backward.

These cases illustrate the need of X raying the wrist at the end of a week as a routine, or sooner if the plaster has become slack. Of the remaining six patients, slight over-correction of the lower fragment had occurred in four of them. This had had no ill-effect on the ultimate result, as two of them who were seen nine months after the fracture had no limitation of any movement in the wrist-joint or of pronation or supination. The third wrote to say that she had no trouble with the wrist. A feature which was observed in four of the cases treated was a shortening of the lower end of the radius resulting in a subluxation of the distal radio-ulnar joint. This was not due to a recurrence of the deformity as in all these cases the lateral X rays showed that the backward rotation and displacement had not recurred. The fourth case illustrates this point :—

F.61. Left Colles's fracture 24/4/34. X ray before reduction showed considerable backward rotation and displacement with subluxation of the distal radio-ulnar joint. Reduced 24/4/34. X ray after reduction showed that an almost perfect anatomical repair had been attained. An X ray taken on 18/5/34—i.e., 24 days after the date of the fracture—and its reduction, with the original plaster still in situ, showed that in the A.P. view the radius seems to have shortened a little and the subluxation of the distal radio-ulnar joint has recurred. The lateral view shows that no recurrence of the backward displacement nor of the backward rotation has occurred. The plaster was removed 36 days after reduction and the patient was discharged two weeks later—i.e., nearly six weeks after the date of the fracture—with good movements. She was seen and X rayed nine months after the date of the fracture. The function of the hand and the grip was as good as that of the opposite hand. The only loss of movement was slight limitation of pronation. There was no pain at the wrist.

A frequent association was observed between subluxation of the distal radio-ulnar joint and pain over the region of the head of the ulna, but this pain did not persist and disappeared in the course of time. Thus of five cases in which subluxation of the distal radio-ulnar joint was present and produced either by shortening of the radius after reduction or by failure to correct this deformity adequately, three when seen nine months after had no pain in the wrist, and the only abnormality as far as movement was concerned was slight limitation of pronation in one of them. Subluxation of the distal radio-ulnar joint was demonstrated to be present by X rays taken then. The fourth wrote to say that she had no pain in the wrist-joint. The fifth case was as follows :—

F.65. Right Colles's fracture 4/4/34. X ray showed extensive comminution of the lower fragment extending into the wrist-joint, with considerable backward rotation and displacement, fracture of ulnar styloid, and subluxation of the distal radio-ulnar joint. Reduced 4/4/34, slight over-correction of the antero-posterior displacements; subluxation of distal radio-ulnar joints, not fully corrected. 27/4/34: plaster removed (23 days). X ray showed lower fragment still slightly over-corrected, but shortening of the radius with an increase in the degree of subluxation of the distal radio-ulnar joint had taken place. The patient attended the fracture clinic for a further three and a half months. 15/3/35 (11 months): dorsiflexion full, flexion slightly limited, pronation full, minimal limitation of supination. The grip was good and the hand was quite useful. On prolonged gripping the patient gets pain over the lower end of the ulna 1 in. proximal to the styloid process. Flexion of the fingers was not quite perfect and the pain over the lower end of the ulna was worse in cold weather.

An X ray showed osteo-arthritic changes in the radio-carpal and distal radio-ulnar joints, and there was a considerable degree of subluxation of the distal radio-ulnar joint present. It seems likely that her arthritis was produced by the damage to the wrist-joint and that the residual pain is due to the arthritis and not to the subluxation of the distal radio-ulnar joint.

It was found possible to retain the original plaster for periods which varied between 2 weeks and 36 days, and with two exceptions the patients were discharged from 4–7 weeks after the date of the fracture.

I should like to express my indebtedness to Mr. Gwynne Williams and Prof. C. C. Choyce for help and criticism, to Mr. C. W. Flemming and Mr. Williams for permission to publish this account of cases under their care, and to Miss M. Scott for the diagram.

## CONGENITAL ATRESIA OF THE DUODENUM

### IN A CHILD AGED THIRTEEN MONTHS

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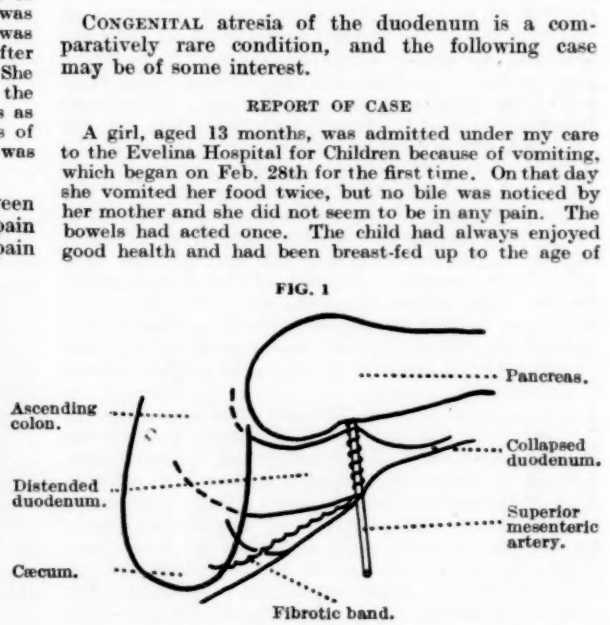
Congenital atresia of the duodenum is a comparatively rare condition, and the following case may be of some interest.

#### REPORT OF CASE

A girl, aged 13 months, was admitted under my care to the Evelina Hospital for Children because of vomiting, which began on Feb. 28th for the first time. On that day she vomited her food twice, but no bile was noticed by her mother and she did not seem to be in any pain. The bowels had acted once. The child had always enjoyed good health and had been breast-fed up to the age of 8 months. On March 1st she vomited her food three times, but nothing else abnormal was noted by the mother. She passed a normal motion. On March 2nd she vomited several times and so the mother decided to bring the child to hospital, particularly as she had noticed "swelling of its stomach." The bowels had been opened.

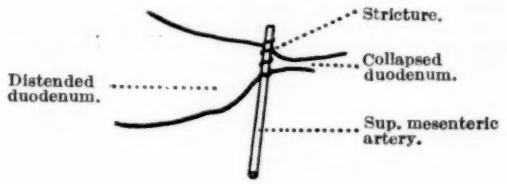
FIG. 1




*On admission* the child looked very ill and was vomiting every few minutes a watery fluid which was not bile-stained. The vomiting was projectile and was preceded and accompanied by signs of abdominal colic—screaming and drawing-up of the legs. On examination it was noticed that the child had obliquely set palpebral fissures and a long protruding tongue and was edentulous. There were

signs of serious dehydration, the eyes were shrunken, the anterior fontanelles depressed, and the skin and tongue dry. There was great distension of the upper abdomen, and also down the right side to the iliac fossa. Large peristaltic waves could be seen commencing at the left subcostal region passing to the right hypochondrium and then to the right iliac fossa. Usually there were about three waves every minute, but on occasions and following abdominal palpation a second wave made its appearance before the preceding one had disappeared. At other times no waves were seen for several minutes; with the onset of each wave the child drew up its legs and screamed. At intervals of 3–5 minutes the child vomited in a projectile manner. The tense appearance of the upper and right quadrants of the abdomen was confirmed on palpation. The pylorus was not palpable. A succussion splash was heard. No free fluid was demonstrable. Rectal examination was negative. Heart: not enlarged; sounds

FIG. 2



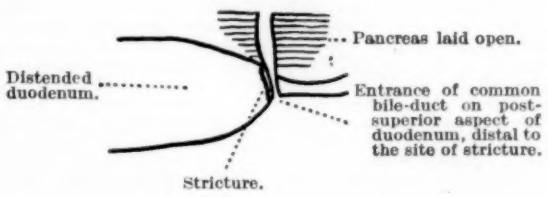

normal. Pulse: 150, regular; volume poor. Lungs: no dullness; breath sounds normal.

A *diagnosis* was made of acute obstruction supervening on chronic obstruction in the duodenum. Immediate operation was decided on.

*Operation.*—Under gas-and-oxygen, a small quantity of ether being given for opening and closing the peritoneal cavity, a supra-umbilical right paramedian incision was made, the rectus being drawn laterally and the peritoneum opened. The stomach and the first and second parts of the duodenum were found to be enormously distended, so much so that the cæcum and ascending colon were lifted anteriorly by the distended duodenum. There was a distinct whitish, constricted area a few millimetres wide, running transversely in the wall of the duodenum dividing the dilated proximal part from the normal, but collapsed, distal portion of the duodenum. At this point the duodenum was crossed by the superior mesenteric vessels ensheathed in dense fibrous tissue forming a raised white fibrous band extending on to the anterior surface of the cæcum. The constricted area on the duodenum, on macroscopic examination, suggested that fibrotic changes had set in. There were some enlarged glands on the surface of the head of the pancreas which did not appear to be rotated. There were also glands in the mesocolon in close relation to the branches of the arteries, and glands were especially noticed in the mesentery of the small intestine.

A duodeno-duodenostomy was considered but was found to be impossible and a duodeno-jejunostomy was also

FIG. 3


Pancreas laid open.
Distended duodenum.
Entrance of common bile-duct on post-superior aspect of duodenum, distal to the site of stricture.
Stricture.

found to be impracticable because of the enlarged glands on the head of the pancreas. A posterior gastro-jejunostomy was carried out—as advocated by Downes, Max Page, and others—but the obstruction appeared so complete that pyloric occlusion, which is advocated in addition by some surgeons, was deemed unwise. This operation was carried out as expeditiously as possible and without difficulty; the wound was closed in layers. It took 25 minutes and saline was given subcutaneously. The condition of the child on returning to bed was extremely grave. Some hours after the operation the child died.

*Post-mortem examination* was carried out the next day. No abnormalities were discovered in the lungs, heart, liver, spleen, small and large intestine, or kidneys. The stomach, duodenum, pancreas, and the gastro-jejunostomy were removed in one piece, together with the cæcum, ascending and transverse colon. On laying open the stomach, which was dilated, the walls were found to be hypertrophied. The pylorus was open. The duodenum was dilated as far as the stricture, and the walls above the level of the stricture were also slightly hypertrophied. The mucous membrane was congested in both the stomach and duodenum.

The stricture in the duodenum was found to encircle it completely and measured in breadth about 2 mm. It appeared fibrotic and extended throughout all coats of the duodenum so that there was a fibrotic area, surrounded by mucous membrane, on the mucous side of the bowel. This strictured area was exactly at the point where the superior mesenteric vessels passed over the duodenum. The pancreas appeared normal and the superior mesenteric vessels were in their normal anatomical situation. On the head of the pancreas were some very enlarged lymphatic glands. Macroscopically these showed inflammatory changes. A long but very definite fibrotic band ensheathed the superior mesenteric vessels and running downwards to the right ended on the anterior surface of the cæcum. Enlarged glands, inflammatory in type, were found in the transverse mesocolon and also in the mesentery of the small intestine. There was no sign of tuberculosis.

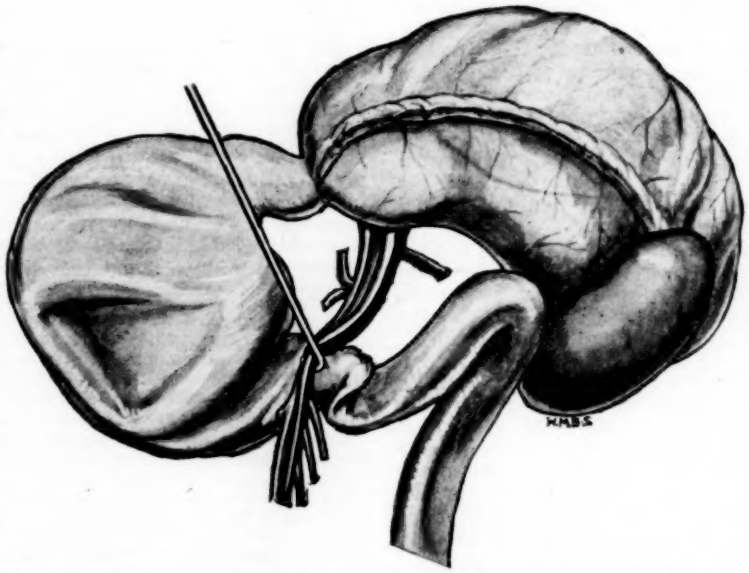


FIG. 4.—Congenital occlusion of the transverse part of the duodenum at the point at which the mesenteric vessels cross. Note the extreme distension of the proximal portion of the duodenum. (From "Surgical Emergencies in Children," Baillière, Tindall and Cox, in the press.)

*Dissection of the specimen.*—My house surgeon, Dr. N. Townsley, made a difficult dissection of the duodenum and pancreas to demonstrate the common bile-duct and the pancreatic duct. The dissection showed that the ampulla of Vater was situated in the distal part of the duodenum, immediately beyond the stricture. The pancreatic duct seemed to enter at the same site. It was interesting to note that the common bile-duct passed directly downwards through the substance of the pancreas and in the same axis into the duodenum, appearing from the outside as if it were going to enter at the site of stricture. No rotation of the pancreas was apparent, and this seemed to prove that as the second part of the duodenum gradually became dilated it had not rotated downwards carrying the head of the pancreas with it. Microscopical section of the stricture showed that the mucous membrane, muscular and peritoneal coats in the area were replaced by fibrous tissue. An attempt to get a fine tube through the stricture failed.

The accompanying sketches of the dissection (Figs. 1–4) will perhaps explain more clearly what was found.

### ÆTIOLOGY OF THE CONDITION

Congenital atresia of the duodenum was first described by Calder [1] in 1733. Davis and Poynter [2] collected 392 cases of congenital occlusion of the intestine between the pylorus and the rectum; a single atresia of the duodenum or jejunum was found in 194, and in 134 of these it was in the duodenum. Out of 184 cases of congenital occlusion of the intestine collected by Kuliga,[3] 46 were in the duodenum. Schlegel, quoted by Braun, found that the occlusion was in the duodenum in 32·5 per cent. of cases, usually in the region of the ampulla of Vater, but occasionally at the junction of the duodenum and jejunum (Cordes,[4] 5 out of 57 cases).

Cautley [5] distinguishes two groups in which the defect is in the neighbourhood of the ampulla of Vater (67 out of 92 cases investigated by Spriggs) in one and usually at the level of the duodeno-jejunal flexure in the other. The first is subdivided into cases occurring above, opposite or below the papilla. Cordes [4] says that in his series 20 instances were above the papilla (10 of these were immediately above), 6 were opposite the papilla, and 13 below the papilla. Cautley emphasises that mere narrowing—i.e., annular constriction partially or entirely obliterating the lumen—is very rare.

Jewesbury [6] quotes 2 cases of duodenal obstruction in infants. In one the stricture was between the second and third portions of the duodenum, but there was no evidence of compression from the surrounding strictures; and in the other it was at the level of the duodeno-jejunal junction. In this case the cæcum was high (as in the case here reported), and the obstruction was caused by pressure from outside and in particular the right colic artery.

In the case I have described above it was noticed that the site of obstruction was exactly where the superior mesenteric vessels crossed the duodenum, and at the time of operation the case was thought to be one similar to that described by Downes,[7] who noticed on X ray examination the obstruction ended abruptly at the site of the superior mesenteric artery; but it was difficult in my case to say why no bile had appeared even in the vomit. This was accounted for post mortem, when it was noted that the common bile-duct ran directly downwards from the superior to the inferior borders of the pancreas and opened directly on to the postero-superior aspect of the duodenum, beyond the stricture.

The operation was also of interest. The ideal seemed to be either a duodenoduodenostomy or a duodenojejunostomy. Mention has already been made of how impossible it was to do either of these and one was compelled to carry out a posterior gastrojejunostomy. This agreed with the operation advocated by others—namely, a gastro-enterostomy with or without pyloric occlusion.

It appears that in this case the atresia was gradually becoming more and more complete and the superior mesenteric vessels were only incidental in completing the onset of an acute obstruction.

According to Tandler,[8] Forssner,[9] and Huerter,[10] the Vaterian segment of the duodenum is occluded by epithelial proliferation during the second month of fœtal life and atresia is due to failure of the plug to break down or become canalised. In my case canalisation had apparently taken place, but one area had become replaced by fibrous tissue which had gradually but surely led to atresia, which had contracted down leading to the onset of the acute obstruction.

I am indebted to Mr. Harold Edwards for allowing me to reproduce the drawing (Fig. 4) illustrating this case, which he had made for his book "Surgical Emergencies in Children," to be published shortly.

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# Clinical and Laboratory Notes

## MONOCYTIC (HISTIOCYTIC) LEUKÆMIA

BY T. N. GLEDHILL, B.A. Oxon., M.R.C.S. Eng.
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THE subject of monocytic leukæmia and reticulo-endothelioses in general has recently attracted a good deal of attention, and Ross [1] states that 22 histologically authenticated cases are on record. The one here described cannot be included in the group of histologically authenticated cases, for, to the best of my knowledge, the patient is still alive; he removed from the district in which he was living and repeated inquiries have failed to trace his present abode. Nevertheless, I think the blood picture as here presented leaves no doubt that the case was one of monocytic leukæmia.

A man aged 48, a canvasser, was admitted to Lambeth Hospital on August 17th, 1933, complaining of shortness of breath, palpitation, loss of appetite, and swelling of the ankles on exertion. He had had bronchitis in 1925 and pleurisy in 1926. The family history contained nothing relevant to his present illness.

*On examination* he was dyspnœic, cyanosed (particularly the ears), and anæmic, and had clubbed fingers. There were signs of mitral disease, but no œdema. In the lungs, abdomen, and central nervous system, nothing noteworthy was found. He had "gross pyorrhœa" but no ulceration of mouth or pharynx. Radiography of the chest showed "no unusual opacities." The Wassermann and Kahn reactions were both strongly positive.

[1] Ross, J. M.: Jour. Path. and Bact., 1933, xxxvii., 311.

*Progress.*—Blood counts from Sept. 12th, 1933, to July 13th, 1934, are summarised in the accompanying Table.

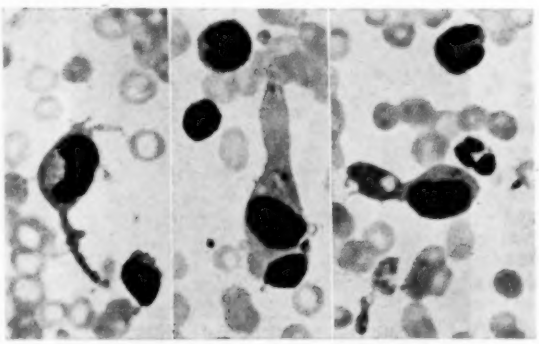
Teeth were extracted on the following dates: August 26th, 1933, Sept. 2nd and 9th, Nov. 4th, 20th, and 25th, and Dec. 2nd, 9th, and 18th, and a good deal of bleeding following each extraction, though it usually ceased in a day or two. A course of antisyphilitic treatment (neoarsphenamine and bismuth oxychloride) was begun on Sept. 23rd, 1933. On Oct. 16th it is noted that the patient was languid; the spleen was palpable, being 2 in. below costal margin. On Oct. 23rd the liver was still palpable. On Nov. 6th however it was only just palpable, and again on Jan. 9th, 1934, its tip could only just be felt. The liver was not palpable, but there was some enlargement of axillary and inguinal glands, and a little œdema of feet. On Feb. 5th the spleen was again 2 in. below the costal margin, the liver not being palpable.

At the beginning of May, 1934, the patient was transferred to St. Mary's Hospital, Sidcup, for convalescence. On July 13th, 1934, he attended Lambeth Hospital for treatment for a carbuncle of the neck, and the blood count taken on that day was the last obtained.

*Table of Blood Counts*

| — | Hæmoglobin %. | Red cells (millions). | Colour-index. | White cells (thousands). | Polymorphs (neutrophil) %. | Polymorphs (eosinophil) %. | Basophils %. | Lympho-cytes %. | Monocytes %. |
|---|---|---|---|---|---|---|---|---|---|
| 1933. | | | | | | | | | |
| Sept. 12 | 42 | 2·72 | 0·77 | 21·8 | 31·3 | 0·3 | 0 | 26·7 | 41·7 (1·0) |
| ,, 13 | — | — | — | 64·8 | 15 | 0 | 0 | 59 | 26 (8) |
| ,, 14 | — | — | — | 77·2 | 24 | 0 | 0 | 50 | 26 (2) |
| ,, 15 | 42 | 2·63 | 0·8 | 39·6 | 22 | 0 | 0 | 48 | 30 (6) |
| ,, 18 | — | — | — | 144·8 | 19 | 0·5 | 0 | 41 | 39·5 (0) |
| ,, 21 | 42 | 2·80 | 0·77 | 90 | 29 | 1 | 0 | 45 | 25 (4) |
| ,, 29 | 44 | 3·00 | 0·73 | 180 | 27 | 1 | 0 | 57 | 15 (2) |
| Oct. 4 | — | — | — | 227 | 23·5 | 5·5 | 0 | 38 | 33 (2) |
| ,, 9 | — | — | — | 134 | 50 | 11 | 0 | 23 | 16 (1) |
| ,, 17 | 44 | 2·87 | 0·78 | 64 | 53 | 3 | 0 | 31 | 13 (1) |
| ,, 26 | 48 | 3·10 | 0·77 | 40·6 | 59 | 2 | 0 | 21 | 18 (2) |
| Nov. 14 | 42 | 2·66 | 0·8 | 6·8 | 61 | 3 | 0 | 33 | 3 (2) |
| ,, 28 | 66 | 3·23 | 1·03 | 7 | 59 | 1 | 0 | 31 | 9 (2) |
| Dec. 20 | — | — | — | 20·6 | 39 | 1 | 0 | 56 | 4 (3) |
| 1934. | | | | | | | | | |
| Jan. 22 | 24 | 1·57 | 0·8 | 4·8 | 45 | 5 | 0 | 38 | 12 (9) |
| Feb. 14 | 20 | 2·15 | 0·48 | 5·2 | 40 | 8 | 0 | 45 | 7 (4) |
| ,, 28 | 20 | 1·8 | 0·55 | 3·4 | 56 | 3 | 0 | 35 | 6 (6) |
| Mar. 8 | 24 | 2·25 | 0·53 | 4·6 | 36 | 0 | 3 | 40 | 21 (5) |
| May 4 | 48 | 3·3 | 0·73 | 2·5 | 32 | 0 | 0 | 59 | 0 (0) |
| July 13 | 54 | 3·15 | 0·8 | 24 | 24 | 0 | 0 | 22 | 54 (4) |

The term "monocyte" as used in the Table includes both the abnormal monocytic forms and the ordinary hyaline forms found in normal blood; the figures in parentheses beneath the percentages of monocytes indicate the number of normal hyaline cells included in each total monocyte count. The abnormal monocyte forms were much larger than the normal hyalines, and the largest encountered measured 43 μ. In Leishman-stained films the cytoplasm was generally of a pale pinkish-blue with rather a "ground-glass" appearance, frequently exhibiting pseudopodia and long, tapering processes; vacuolation of the cytoplasm was seen in many. For the most part the cytoplasm was finely granular, the granules being of an azure colour and arranged near the nucleus. The shape of the nuclei varied; some were oval, others reniform, and a few were lobulated; all nuclei were rather pale-staining and showed a fine reticular chromatin network. No nucleoli were observed. In many cells, inclusions of erythrocytes and erythrocyte remnants were seen. Almost the whole of these cells were oxidase-negative, the very few which were positive being but faintly so. Supravital staining, using a modified Sabin technique as described by Orr,[2] gave the characteristics of the monocyte.



Monocytes in blood films.

My thanks are due to the late Dr. J. A. Braxton Hicks, group pathologist at Lambeth Hospital; to Dr. P. J. Watkin, medical superintendent of the hospital, for his permission to use the clinical records; to Dr. E. N. Allott, group pathologist at Lewisham Hospital, for the blood count of May 4th, 1934, whilst the patient was in St. Mary's Hospital, Sidcup; and to Dr. J. E. McCartney, director of pathological services, L.C.C., for the photomicrograph.

## FOREIGN BODY IN THE BLADDER ASSOCIATED WITH PREGNANCY

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THE case here described presents certain points of interest, both obstetrical and urological, in that an attempt to produce abortion by the introduction of slippery elm was followed by normal labour and delivery of a full-term infant, but resulted in considerable damage to the urinary tract.

The patient, a married woman aged 39, was admitted to St. Mary Abbots Hospital, Kensington, on May 15th, 1935, having been sent by her own doctor with a diagnosis of 34 weeks' pregnancy complicated by carcinoma of the bladder and vagina. She had had six previous normal labours.

On admission she gave a history of dysuria, incontinence of urine, and a blood-stained vaginal discharge for the past six months. Examination showed a 36 weeks' pregnancy, vertex presentation with the head engaging, whilst inspection of the vulva revealed a small amount of granulation tissue surrounding the urinary meatus from which turbid urine was dribbling. Per vaginam the cervix appeared normal, but a hard elongated mass was palpated through the anterior vaginal wall, apparently lying in the urethra and bladder. X ray examination showed a cylindrical foreign body having a thin core of lesser density lying

[2] ORR, J. W.: THE LANCET, 1933, i., 403.

in the region of the urethra and neck of the bladder. The patient was then further questioned and admitted having introduced a piece of slippery elm, into the womb as she thought, during the third month of pregnancy; she left it in situ thinking that it would be absorbed naturally.

She was seen by Prof. James Young, in consultation with Mr. James Carver, and it was decided, in view of the possibility of damage to the bladder and urethra during labour, to remove it forthwith. The patient, however, went into labour unexpectedly next day; this was

The foreign body after removal (scale in inches).

short and uneventful, and she was delivered of a healthy infant weighing 7 lb. There was no apparent damage to the bladder or urethra, as evidenced by the absence of hæmorrhage, but the patient remained incontinent, the temperature was raised, and the urine very foul, cultures of which grew abundant organisms, chiefly of *Staphylococcus albus*.

On the seventh day Mr. Carver again saw the patient with Prof. Young, and in view of the gross infection of the bladder, removal of the foreign body was decided upon. Suprapubic cystotomy was performed next day, and the foreign body, which was projecting from the urethra into the bladder, was removed. It was found to consist of a thin core of slippery elm, about ten inches in length and one-sixth of an inch in diameter, doubled on itself. Superimposed upon this was a deposit of phosphates forming a solid conical mass approximately 4½ in. in length and 2½ in. in diameter at its greatest width (see Figure). A de Pezzer catheter was inserted into the bladder, and six days later was replaced by a Hamilton Irving box. The wound was healed by the fourteenth day, and on discharge the patient was able to hold her water for two hours.

A subsequent intravenous pyelogram showed marked pyelectasis of both kidneys, and a small bladder having a grossly irregular outline.

I am indebted to Mr. Carver and Prof. Young for permission to report this case.

## LOCAL TREATMENT OF VASOMOTOR RHINORRHŒA

By A. Tumarkin, M.B. Liverp., F.R.C.S. Edin.
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At present the most popular forms of local treatment for vasomotor rhinorrhœa seem to be cautery and ionisation. It can hardly be doubted that both of these act by a limited destruction of the mucosa, and though the danger of excessive damage by any single application is probably slight we must remember that patients are liable to require treatment every year and the cumulative effect might eventually be atrophic rhinitis with crust-formation. It is unfortunate that little has been done to ascertain histologically the extent and duration of the effects of ionisation, but McMahon [1] reports that it produces definite destructive changes in the frontal sinuses mucosa of dogs. Further disadvantages of ionisation are that many patients find it trying; that, even when cocaine is used, it may set up uncontrollable sneezing which dislodges the packing and washes away the electrolyte; and (above all) that there is no means of controlling the coagulative effect, which is apt to be locally irregular.

These considerations have led me during the past few years to experiment with chemical caustics. Various strengths of chromic, lactic, trichloracetic, and finally carbolic acid were tried, and it became clear that a pure solution of the latter was definitely the best. Before going any further, I must say that I felt all along that such a simple line of treatment must have been tried by many rhinologists. I was not aware however of any systematic investigations until recently when I found a report by Chandler [2] on identical lines, and I gladly acknowledge his precedence.

The technique of phenolisation is simplicity itself. A small cap of cotton-wool, tightly wound on a Heath probe, is dipped into pure phenol. It is lightly rolled on lint to remove the excess, and then rapidly smeared over the nasal mucosa. A mild reactionary rhinitis usually follows for about a day, but there is no discharge of tissue sloughs. The treatment is painless, only taking a few seconds, and assuming reasonable skill in intranasal applications, the surgeon after a little experience can easily grade the intensity of his application.

Two questions at once arise: how much good does it do the patient, and how much harm does it do the mucosa?

Out of 9 patients treated over a year ago 6 remained free of symptoms for a year or more. One relapsed after about a year's freedom, but was again "cured" by further treatment. One derived benefit for only a few weeks, and another for only a few months. Several recent cases have been more resistant, and I am coming to the conclusion that further experience in selecting cases is desirable. In particular, I believe that this line of treatment is better suited to the cases of the chronic than of the acute seasonal type.

The second question could clearly only be answered by animal experiment, and I am indebted to Prof. C. E. Walker for his advice and help in experiments on rabbits in the histology department in the University of Liverpool. Phenol was applied to the nasal and also to the tracheal mucosa, and the animals were killed and examined after varying intervals. The results are precisely what one would expect. For one or two weeks the mucosa is covered by tough coagulum. The submucosa shows vascular engorgement and round-cell infiltration. After a time resolution occurs. Nevertheless in certain minute areas necrosis has extended to the basement membrane, and so continuity can only be restored by scar tissue. Of course the technical difficulties of applying the acid to the delicate tracheal mucosa via a miniature bronchoscope were formidable. It is not unfair to assume that the more robust and accessible human mucosa would come to no harm from this application in careful hands. Certainly it will compare favourably in that respect with other forms of treatment.

[1] McMahon, B. J.: Ann. of Otol., Rhin., and Laryng., 1934, xliii., 643.
[2] Chandler, G. F.: Med. Jour. and Rec., 1932, cxxxvi., 337.

# MEDICAL SOCIETIES

## ROYAL SOCIETY OF MEDICINE

### SECTION OF PSYCHIATRY

AT a meeting of this section on Oct. 8th Dr. H. J. NORMAN gave his presidential address on

**Psychiatric Digressions**

Laying stress on such matters as personal predilection dictated or as seemed to require discussion.

The strict meaning of psychiatry, he continued, was "the treatment of mental disease," but the word had come to have wider implications and is used synonymously with psychological medicine. It was the section of medicine which dealt with the causes, symptomatology, course, and treatment of mental disorders. Even this did not give a clear indication of what the subject embraces or of what led up to an adequate comprehension of it. Preliminary to it there was the study of psychology and indeed of philosophy. The neglect of the study of these had often been regretted; it would have been still more regrettable but for the fact that so much of it was a waste of time, arid, and unfruitful. With the growth of knowledge, however, there had he thought been a gradual change in this respect, and it was to be hoped that there would soon be a more or less general concensus of opinion on the essentials which the students should acquire. Prophylaxis was of great importance. It had long been apparent that of the causative factors of mental disorder the one of pre-eminent importance was hereditary predisposition.[1] Even where an exogenous factor—e.g., alcohol—appeared to be predominant it was nevertheless often only an exciting one. This aspect of the matter was, therefore, one of eugenics.

#### PROPHYLAXIS AND TREATMENT

Unfortunately, however, when it was suggested that manifest psychotics or defectives should not be allowed to breed, many loud cries of dissent were heard. It was true that this predisposition was negative in character but the same thing might be said of many diseases. It was the lowering of resistance which was important there also; and if resistance could be increased by any means—for example, in the common cold or in phthisis—the pathogenic factor might be successfully resisted. So, perchance, with the psychoses. It might be taken for granted that psychotic people would continue to be born. The realisation that there was a predisposition was of value because it might be possible to arrange that the individual would so order his life as to avoid those factors which are fraught with greater danger to him than to someone more stable. The nervous child might be guarded against overwork and insomnia when he worried unduly over school routine. In recurrent cases the attacks might be minimised or shortened. Some day there would perhaps be more legal restrictions upon the chronic alcoholic so that he might be prevented from drinking himself into dementia and his family to destitution. Treatment was of course the culmination of their efforts and of their investigations; but this itself was dependent on diagnosis, on the recognition as far as possible of the ætiological factors, on the existence of adequate facilities, and on the willingness of the patient to undergo or of his friends to consent to what was requisite.

Undoubtedly much improvement had taken place; but there had not been a coincident variation in the recovery-rate. It was hardly fair to blame the mental hospitals for this—while they were still apt to be regarded as a last resort to which patients were sent when everything else had failed. Even in reaching such a conclusion as this it was only just to consider the results of treatment in general medicine and in surgery. There were many chronic diseases in which treatment could only be palliative; but these diseases were not, in many instances, so socially disabling as were the psychoses, or they were more fatal. A point to be remembered also was that statistics as to cures—or of failures—were more readily accessible in regard to mental hospitals; so the critics had their materials more ready to hand. General hospitals were as a rule more fortunate in this respect; and it was but human to lay stress on the successes and to minimise the failures. It would be a great comfort in medicine if it was known in even a good proportion of successful cases how actually the cure was effected. In the gradual emergence of medicine from an art into a science it might be hoped that the *post hoc* fallacy would become a thing of the past and that it would be possible to add *propter hoc* with complete veracity—though not, doubtless, with greater assurance! The treatment of general paralysis might legitimately inspire hope not only so far as that condition was concerned but in some others which had so far proved refractory. For example, it might be possible some day to readjust the balance—glandular, perchance—in manic-depressive disorders, or to discern what was the actual degenerative change in the schizophrenic group.

Dr. Norman then discussed the relative importance of psychology and of the philosophic aspect in general. The decision to which of the philosophic schools with their varying, often contradictory, opinions one gave allegiance seemed for the most part to be a matter of temperament. His own leanings were towards empiricism, which had been defined in the "Encyclopædia Britannica" as "the theory that all knowledge is derived from sense experience. It is opposed to all forms of intuitionalism, and holds that the mind is originally an absolute blank (*tabula rasa*), on which, as it were, sense-given impressions are mechanically recorded, without any action on the part of the mind." He discussed at some length the grounds on which this philosophy was based and concluded that given the conditioned reflex and all the inferences made possible thereby, a cerebral mechanism could be constructed which was surely adequate for all the intellectual products of a Shakespeare, a Goethe, a Dante, or even of a Bernard Shaw. In the same way that the process of evolution demonstrates the gradual building up, so did the devolutionary changes show the absolute dependence of mind upon organic structures. Day by day they had to watch the fearsome experiments which nature performed on suffering humanity. These demonstrated only too clearly the gradual and final moral, intellectual, and emotional degradation which occurred if the process was not checked. Other lines of study had their own importance—for example, the application

[1] Dr. J. C. Prichard was quoted by Samuel Tuke in his introduction to Jacobi's On Hospitals for the Insane as long ago as 1841 as saying: "Mental derangement, considered generally, or with respect to the aggregate number of cases, may be looked upon rather as a congenital imperfection, than as a disease resulting from external impressions."

of our knowledge of mental disorders to biography and history; to the borderland of insanity where the mattoids, the eccentrics, some of the sexual perverts, and a good many criminals were to be found, and on the outskirts of which the more fanatical devotees of strange cults existed; to the question of the neuropathic constitution of so many men of genius; to the social aspect and the influence of the neuropath in bringing about revolutions and wars; and in endeavouring to counteract the misconceptions which still exist among the public with regard to insanity so that more reasoned, more dispassionate views may prevail. He dealt fully with some of these aspects, notably with popular misconceptions or fallacies regarding mental disorders, in the past and in the present. It would be idle to maintain that there was not room for improvement in mental hospitals, but there were no reasonable grounds for the sweeping accusations that continued to be made. These were unjust to those who had charge of the patients and distressing to relatives and friends. It was not the good faith of the critics but their knowledge which was at fault, and this led to exaggeration and distortion in their statements.

### PROBLEMS OF DETENTION

Conditions in asylums in the past were certainly bad. The testimony of reliable persons made that clear, as did also the official reports of the time. But many of the writers who described them were romancers who saw to it that their tales lost nothing in the telling, and because they were by nature imaginative, could hardly avoid distortion and misrepresentation. In addition they might have, perhaps unwittingly, allowed themselves to give undue weight to tainted evidence, especially with regard to the matter of illegal detention. The speaker admitted that after hearing some of the testimony in the law courts he would at times prefer to accept that of the patient—even of the certified one. But there were those whose preference was for the allegations of the insane, or, at the least, of the half-mad, if their statements are adverse; and these same persons would be justifiably annoyed if such allegations were accepted against themselves in a court of law.

Dr. Norman quoted some comments on "the horrors of certification" and "the scandal of the Urgency Order" from the modern daily press. He was not concerned to discuss specifically such allegations—though that would be an easy matter—but with the general tone and the attitude which they typified. It was all so simple to these self-appointed critics. Lacking practical knowledge of what it meant to have to deal, day in, day out, with the mentally disordered, they could not begin to appreciate the difficult problems which had to be faced. For example, when could constant and vigilant supervision be relaxed in the case of the suicidal patient; when should he be allowed out alone on parole; or at what stage in his progress towards recovery was it advisable to suggest that a patient should be discharged from certificates? Again, what was to be done with the voluntary patient who gave notice of his intention to leave and of whom it was felt that he might become a danger to himself or to others. A patient might be plausible, lucid, and might argue rationally—his premises being granted—and yet might attack his companions like a fury when released from control. There was also the person who had recovered sufficiently to be discharged but had never realised adequately that he has had an attack of mental disorder. His cloudy recollection might be of the struggles associated with such things as feeding, bathing, and indeed with many events in which his negativism had been overcome only by considerable effort. This, which was a matter of daily experience to nurses, was understood by few besides them. There was, too, the patient who always had a grudge and a grievance, who moved from one hospital to another, but was always disgruntled. It is not in mental hospitals alone that this type was to be found; every boarding-house and hotel knew it.

Such patients formed, fortunately, a very small percentage of the total, but there seemed every likelihood, however, of that proportion being maintained. It had to be remembered that the most difficult, troublesome, exigent, and querulous individuals in the community were relegated to the mental hospitals—frequently after they have exhausted the patience of their relatives and also when they had already been subjected to treatment elsewhere. The lay press exercised great power and influence, for the most part wisely and honourably. Dr. Norman pleaded, therefore, for a wiser discretion in the attitude which editors adopt in these matters and a more careful sifting of the evidence presented to them, otherwise they might do more harm than good. By inspiring fear of mental hospitals in patients and friends, they might cause delay in patients being placed under care, and they added to the anxieties—already great in many cases—of the relatives.

Dr. Norman quoted extracts from various sources, including the Report of the Royal Commission on Lunacy and Mental Disorder (1926), as evidence that there is no foundation to justify allegations of improper detention or ill-usage in mental hospitals to-day, and from an article of his own published 22 years ago entitled "The Brighter Side of Mental Hospital Life" to show that the mental hospital is not a gloomy place. One fact noted by Dr. Donald Gregg (1932) which had always appealed to him (he had very often used it for the encouragement of patients) was that in the majority of cases unhappiness was a symptom of favourable prognostic value. It was still held by many that a patient's mental condition was made worse, or even that insanity is caused, by association with other patients; and it was even said that members of the staff of a mental hospital were influenced in some sinister way and became "mental cases." If they did, the numbers were not disproportionate to the incidence in other occupations, and even if insanity did occur frequently in these staffs a reason might be sought, not in "communicated" insanity, but in the arduous and worrying nature of the work. Actually it would appear to be a difficult matter to cause a psychotic condition. It was quite a common experience even nowadays to have to discuss this aspect of the matter with relatives—even with doctors—who regarded it as not only a possibility but, indeed, as a probability. Just about a hundred years ago an enlightened alienist, Dr. Jacobi of Siegburg, affirmed "that among six hundred cases he had never witnessed one in which the patient sustained any material injury from his residence in the establishment . . . or from any influence exercised upon him by the other patients." From a more considerable experience Dr. Norman could confirm Dr. Jacobi's conclusions. The contrary might indeed be asserted with considerable confidence, possibly because man was a gregarious animal. Even melancholics sometimes profited by an awakening of interests other than in their own morbid state, and the introspective type which may well be described as the "malade imaginaire" might also benefit therefrom.

### HISTORICAL APPLICATION

**It would be found, Dr. Norman went on to say, that the application of psychiatric methods to the study of biography and of history had a more than academic interest. History might not repeat itself; but the course of events might nevertheless be predicated with some confidence if the constitution and the circumstances of an individual were known.**

The manic-depressive, the melancholic, the paranoiac, the alcoholic, the epileptic, may possibly bring much trouble to themselves or cause it to others when they have freedom of action or when they are encouraged to give rein to their morbid proclivities. It is bad enough when they are merely subjects; but magnify their opportunities by giving them unlimited power and the results may be disastrous. Not always so, however, for, as we see the patient in a hypo-manic phase writing or talking brilliantly, or carrying through business transactions, so we read of the amazing careers of kings, conquerors, great statesmen and dictators, who lived on the borderline of insanity or who actually were at times mentally disordered, but who were able, for the most part, to do great and successful work: Alexander the Great, looking for fresh worlds to conquer and dying of alcoholic excess after having "emptied ten times the goblet of Hercules," Julius Cæsar, Richelieu, Napoleon, Peter the Great, Charles V., Frederick the Great, Clive, who twice attempted his life in his early years and eventually committed suicide at the age of 49. But consider the other side of the picture and contemplate the careers of Nero, of Caligula, of Heliogabalus, of Ivan the Terrible, of Jean Paul Marat. King George III. suffered from manic-depressive insanity and Pitt (Earl of Chatham) had recurrent attacks of mental disorder; what influence did this have on our foreign policy, remembering that it was the epoch when we lost the American Colonies? Wars, "holy" as well as other kinds, have been brought about or incited by fanatics playing on the emotions of the populace. When we look abroad in the world we can still appreciate how applicable is the saying of Dr. Johnson—"As a madman is apt to think himself grown suddenly great, so he that grows suddenly great is apt to borrow a little from the madman." There are at the present time individuals holding prominent positions and influencing the destinies of countries, who are known to be unstable mentally or who have actually had attacks of mental disorder. We know that after recovery from an attack, or in intervals between the disordered phases, a person can be as capable as ever; but it seems an undue risk, for the individual and for the State, to place too great a responsibility, with all its anxieties and worries, upon the shoulders of such a one.

Bearing these facts in mind, is it unreasonable to hope that there may be safeguards so that they shall not occur in the future? Will it ever be possible to limit the scope of action of such individuals, especially if they are known to be unstable? It seems an idle dream so long as we cannot set our houses in order in philosophy, in religion, in art, in politics, or in medicine. Always contest and controversy—so that we have to salve our conscience by saying that war is necessary, even beneficial, and making our motto not charity and long-suffering but "I come not to send peace, but a sword," or "War is a terrible trade; but in the cause that is righteous, sweet is the smell of powder."

Instead of man considering himself as so wonderful "a piece of work" it might be better if he were trained more along materialistic lines; and rather than say, half-heartedly, that he is a miserable sinner—which only the melancholics really believe themselves to be—admit that the human mechanism is a fallible and delicate one which a fever, some glandular change, disorder in the cerebral circulation, can throw out of gear; and that if "great wits are sure to madness near allied," the small ones also are only divided from it by "thin partitions."

Indeed it is "a mad world, my Masters." Apropos—one of my patients recently handed me a cutting from the *Times* with this passage underlined—"As I look at the world of 1935 it seems to me to have gone mad, or, as an alternative, that I must have gone mad myself." It looks as if there may be a great future for psychiatry!

In this connexion there is an interesting movement initiated by the Netherlands Medical Association under the title of the Committee for War-prophylaxis. In a communication which I have received on the subject the following passage occurs—"The psychiatrists should try to strength the opposition against war, . . . Besides the activity which each of them may develop by himself or together with his colleagues within his own country, the psychiatrists can, by international co-operation, attempt to bring the nations and their leaders to a realisation of fact; they can enlighten them on the psychic mechanisms which cause war."

**This may at the present time, Dr. Norman concluded, seem rather a forlorn hope, but it is one with which I gladly associate myself and to which, I trust, many will give their benison.**

## INSTITUTE OF MEDICAL PSYCHOLOGY

Prof. C. G. JUNG visited the institute last week to give five seminars on

### Fundamental Psychological Conceptions

**His first lecture dealt with his view of the structure of the mind: the nature of consciousness and unconsciousness and the ecto- and endopsychical functions. He said that the four ectopsychical functions consist of sensation, feeling, thinking, and intuition, and the endopsychical functions consist of memory, the subjective components of conscious functions, the affects, and the invasions. The ectopsychical functions he has dealt with in great detail in his "Psychological Types"; the endopsychical are not so familiar. He explained memory as the function that links a man up with the things that have faded out of consciousness, that have become subliminal or repressed. The subjective components of conscious functions determine the instinctive reactions of a person to other persons or situations; they are the emotional contents that play such an important part in projection and transference. The affects are not really functions but events, emotions that possess the man and of which he may control the expression but not the existence. In invasion the unconscious has full control: it can break into the conscious condition and the man is then beside himself and not responsible for his behaviour.**

**The discussion brought out some interesting distinctions between emotions and feelings, principally the fact that emotions have a definite physiological counterpart—the flush of anger, the heightened pulse-rate, or the psycho-galvanometric response. Prof. Jung also developed his view that feeling is a rational function, a view which is perhaps peculiarly difficult for Englishmen to appreciate. It is, he says, the function by which we assign values to things; it is quite independent of thinking and may be antagonistic to it. Just as there may be abstract thinking, so there can be abstract feeling: values may be as abstract as ideas. A man may adapt himself to life by means of either one of these functions, but never by both equally; one of them will always be inferior, relatively undifferentiated, and ultimately uncontrolled.**

**At the beginning of the second evening Prof. Jung began to deal with the structure of those depths of the unconscious mind which lie below the personal unconscious, or subconscious. The contents of the "collective unconscious" are mythological, archaic, archetypes which are common to mankind in general. An uneducated negro in the Southern States will dream of a man crucified on a wheel, the Ixion of Greek legend, the ancient sacrifice to the sun-god.**

A schizophrenic patient will have a vision which, stage by stage and even word by word, is identical with the account of another vision in an Egyptian papyrus. This is Prof. Jung's chief interest, and he has performed an enormous amount of research, with the assistance of expert philologists and archæologists, into the myths of such widely separated civilisations as the ancient Greek, Babylonian, Chinese, and Aztec, and into the legends and religious beliefs of many uncivilised peoples such as the Pueblo Indians of Mexico and the Bantu tribes of East Africa. The rest of the second lecture was chiefly devoted to an exposition of the word association test as Prof. Jung uses it both in private practice and—strange procedure to English minds—to determine the guilt or innocence of persons accused of crime.

### DREAM ANALYSIS

In the third lecture, on dream analysis, he managed to compress into his comments on a consecutive series of dreams by one patient a whole text-book on the practical use of dreams in psychotherapy. His first rule is common to all diagnosis: that prejudice is fatal. When a patient relates a dream the doctor must put aside all that he knows about the patient or the art of dream interpretation in order to deal with an entirely new problem. Only by finding out what each symbol means to the patient can he venture to attribute a meaning to the dream. Therefore he handles it as if it were a Greek or Sanskrit text and applies ordinary philological methods. The dream, he says, does not conceal; merely, people do not understand it. Just as the philologist, applying the principles of amplification, seeks the parallel application of an unknown word in other texts, so Prof. Jung inquires from the patient what the symbols of the dream mean to him. A patient dreams of water: he may associate it with greenness, with $H_2O$, or with suicide. In any event, his association will indicate the "tissue" in which the word or picture is embedded. Secondly, Prof. Jung insists that every dream has a history before it and will have a history after it; it is part of a continuous tissue, a long film, and one dream is a single observation through the time-slit. Nevertheless, there is, he says, a particular class of dream which the analyst may venture to interpret without knowledge of the patient's personal associations, simply because the dream is impersonal: it comes from the collective or impersonal unconscious which is common to all mankind and therefore all mankind are qualified to interpret it, because they will attach the same meaning to its symbols. Such dreams are called by savages "great dreams," as opposed to ordinary dreams, about which savages feel much the same indifference as do materially minded civilised people. These "great dreams" have a peculiar compulsive quality of their own; this quality not only imposes itself upon the patient but also upon the physician and upon anybody else who hears of the dream. Its symbols are archetypes of mythology—serpents, wells, daggers, bowls, monstrous animals, heroes.

Prof. Jung is developing the theory that these mythological dreams are related to the organic structure of the body. He has certain reasons for thinking that the serpent often represents the cerebro-spinal system, especially the medulla and spinal cord. The crab, being invertebrate, represents chiefly the abdominal sympathetic and parasympathetic systems. He proceeded to develop the theme, relating the dream of a young man which depicted a dark chamber containing a well, below the cathedral in the city of Toledo; the chamber was inhabited by a serpent and contained a dagger. These symbols he said, can be paralleled in practically every repository of legend and stand for the task which every man has to descend into and subdue his inherited and parental components.

### TRANSFERENCE

He was not, unfortunately, able to complete his analysis of this dream, and it will probably long remain for many of his hearers a teasing, unsolved riddle. In response to urgent requests, he decided to substitute a lecture on transference and its treatment, which was a most practical piece of instruction. The problem of transference is inseparable from psychotherapy; Prof. Jung gave his audience a rare insight into it. He defined it as a special case of projection; whereas projection may carry over subjective contents into an inanimate object, transference is a projection on another person. Like any projection, it is involuntary—"You find it." The emotional contents that are projected have a compulsory influence upon the subject, for the emotion is not detachable from him. There is a link, an elastic string, which no will-power can break. Even if the doctor is entirely detached from the patient's emotional processes, the transference must have a certain effect; it is his duty to some extent to accept and mirror the transference. This is why Prof. Jung always sits in front of his patients and talks to them as to normal human beings, reacting humanly to their emotions. When the patient's projection is identical with contents in the doctor's mind which he also projects, there is a counter-transference and the end of the analysis is usually disaster. This is why analysts ought to be analysed, even as the Pope has a father confessor, so that there will be no blind spots in their minds through which a patient—the most cunning of beings—can take possession of their unconscious emotions and cause what Prof. Jung calls personal contamination through mutual unconsciousness.

Transference, according to Prof. Jung, is not by any means exclusively erotic, he says: all activated contents of the unconscious that can be projected on to a person may be the contents of transference. The intensity of the transference relationship is always equivalent to the importance of its content to the subject, and if he can overcome it, the amount of energy that has been wasted in the projection is available for useful conscious activity. Transference is by no means love; on the contrary, it is a misuse of love. It may be set up at first sight, but is usually only established through analysis. It is then often caused through a difficulty of emotional relationship between the doctor and the patient. If they cannot get on together as human beings, then spurious and compulsive feeling comes in as a compensatory mechanism, an attempt of the unconscious to bridge the gap on a lower level. It is a measure of lack of sympathy, not of the strength of it. The worst transferences occur in patients who are shut up in themselves and resist human relationships.

When a transference is in existence, the doctor will often be warned by a compensatory dream or phantasy that he is taking a false attitude towards his patient. Prof. Jung stressed the interesting and unusual view that transference is by no means a necessary or even a desirable part of analysis, but an epiphenomenon which is nothing but a hindrance and should not exist, which should if possible be avoided, and which at best serves only as a warning that things ought to be better managed. Incidentally, Prof. Jung in this lecture made a vigorous defence of his absorption with mythology. He declared

that he would never have worked out the meaning of mythological symbolism if he had not been terribly pestered with transference. His endeavour to solve it, he said, took him into this field of research, and he has already been able to gain knowledge of incalculable value to every practising psychotherapist.

ACTIVE IMAGINATION

Prof. Jung had intended to devote the fifth seminar to the subject of active imagination, but as he decided to interpolate the lecture on transference, he could only find time for a short survey of the subject in answer to a question. Active imagination, he explained, is a method of investigation which cannot be carried out by all patients, but which in those specially gifted is a much more powerful, controllable, and creative method of investigating psychic contents than word association or even dream analysis. It is a process of direct fantasy by which the patient can enter, actively and not passively, into his unconscious mind. The key which unlocks the door is probably different for each patient, and may require careful search. Some patients enter by means of drawing or painting symbolical pictures; others by means of descriptive writing; others may look at a picture and discover that they are part of it and are following a road, as did Alice through the Looking-glass, that leads through it into unportrayed country. The process is essentially creative whatever form it takes and has nothing to do with passive day-dreaming. Its results are often intensely interesting and valuable to the patient. The activity affords an almost immediate sublimation of the energy which has hitherto expressed itself in neurotic symptoms, and the patient has a good prospect of a rich reward in self-development and integration.

# REVIEWS AND NOTICES OF BOOKS

## Bacteria in Relation to the Milk Supply

By C. H. CHALMERS, B.Sc., N.D.A., the University, Leeds. London: Edward Arnold and Co. 1935. Pp. 192. 6s.

THE author has incorporated into small space most of the essential information concerned with the bacteriology of raw and heated milk. The routine bacteriological examination of milk and water, including the object of such examinations, the description of various technical procedures, the advantages and disadvantages of the different methods noted, and the interpretation of results are clearly explained. Taints and abnormal conditions in milk, the isolation and identification of organisms from milk, and the control of the dairy plant are then discussed, and in the remainder of the book the general methods of bacteriological technique are described; these include the preparation of culture media used in dairy bacteriology and the use of stains and microscopes. The Ministry of Health milk standards are also noted.

The book is so arranged as to be of considerable assistance to the trained bacteriologist suddenly faced with dairy bacteriological problems, whilst the untrained laboratory worker, the dairy worker, and the farmer can all gain practical guidance in their own particular fields. The chapter on taints and abnormal conditions includes a description of the contaminants of milk, the manner in which they may alter the milk, the identification of such organisms, their usual source, and method of avoidance. Without going too deeply into the realms of determinative bacteriology, sufficient information is given to enable a tentative identification to be carried out, following which recourse can be made to the appropriate literature. The condensation of this hitherto scattered information into a single chapter is of particular value to those concerned with the bacteriology of dairying.

Mr. Chalmers has performed an extremely useful service in thus assembling all the essential information regarding the bacteriology of milk. The book is attractively set out and well printed, and the illustrations are clearly reproduced.

## Science and Religion

By N. BISHOP HARMAN, M.A., M.B., B.Ch. Cantab., F.R.C.S. London: George Allen and Unwin Ltd. 1935. Pp. 175. 5s.

Mr. Bishop Harman, adding another to the many books which have been written on the relations of science and religion, finds no difficulty in their harmonious coöperation in the satisfaction of a man's soul. A religious man takes pleasure in contemplating the goodness of God and likes when he is by himself to let his mind range round mysteries which are at the moment beyond him, but which he hopes may come within his comprehension. A scientific man delights in the order of nature and lets his imagination run on what is just round the corner rather than what is in sight. One is much the same as the other, and a scientific man is driven to be religious more certainly than a religious man is attracted to science. To neither is dogmatic theology essential or material. We doubt whether the thesis that "religion promises its disciples certain boons" could be maintained as a general proposition, and we wonder who is the "James Hinton" of p. 127 who wrote a book entitled "The Mystery of Pain."

The subject discussed in this book maintains its interest for many people in whose youth the conflict between religion and science was a live issue, and it is to them rather than to the younger generation that it will make an appeal.

## The Nervous Patient

By CHARLES PHILLIPS EMERSON, M.D., Research Professor of Medicine, Indiana University, Indianapolis. London and Philadelphia: J. B. Lippincott Company. 1935. Pp. 453. 18s.

THIS useful work has the advantages and disadvantages of having been written, not by a psychiatrist, but by a physician interested in the psychological aspect of his patients' illnesses. Dr. Emerson, after 20 years as professor of internal medicine, has come to the conclusion that none but the internist can "evaluate those elements which the patient's disturbed personality injects into the clinical pictures of organic diseases; he alone can recognise those almost exact imitations of these same organic diseases which have their origin in the emotional life of the patient." But for much of his knowledge of neurotic mechanisms and ways of dealing with them Prof. Emerson seems to be dependent more on the literature of psychiatry than on a large personal experience. His best chapters are those in which he gives straightforward accounts of the symptoms, diagnosis, and treatment of physical diseases, accompanied by reminders and discussions of the psychological factors that may affect the system in question. There is a falling off in the second half of the book,

which deals with disorders of sleep and sex, the development of personality, and the varieties of mental disorder. It is, however, clear that Prof. Emerson has not aimed at any profound study of the topics covered, but rather at a mildly critical survey that would be of use in practice. The book as a whole is a sensible and trustworthy guide for the general practitioner who desires to pay regard to an often overlooked but very important part of all illness and treatment.

## Cunningham's Manual of Practical Anatomy

Ninth edition. Revised by J. C. BRASH, Professor of Anatomy, University of Edinburgh; and E. B. JAMIESON, Lecturer on Anatomy in the University. London: Humphrey Milford, Oxford University Press. 1935. Three vols. Pp. 1467. 12*s.* 6*d.* per vol.

IT is a pleasure to see a new edition of "small Cunningham," and to see in it the terminology now definitely adopted by the Anatomical Society of Great Britain and Ireland. The original author passed it through its first four editions, after which Prof. Arthur Robinson carried it on for nearly a quarter of a century. This is the first issue under the present editors, who may safely lay aside the misgivings of which they speak in their preface. They have produced an excellent work, in which any changes made have been in the direction of guiding the student's mind towards the clinical value and application of his work. The volumes have been reduced in size, although several new figures have been added, and an introductory chapter containing general information and directions for the dissector. The work will easily maintain its premier position.

## Modern Methods of Feeding in Infancy and Childhood

Fifth edition. Revised by DONALD PATERSON, B.A., M.D. Edin., F.R.C.P. Lond., Physician for Diseases of Children, Westminster Hospital; Physician, Hospital for Sick Children, Great Ormond-street; and J. FOREST SMITH, F.R.C.P. Lond., Physician, St. Thomas's Hospital. London: Constable and Co., Ltd. 1935. Pp. 213. 7*s.* 6*d.*

THIS excellent little volume has now become well recognised as a simple and straightforward handbook of infant feeding. The fifth edition differs little from the fourth, which appeared only last year. Breast-feeding has been placed in the forefront to emphasise its importance, and the section on diarrhœa in the breast-fed infant has been rewritten. Several of the tables have been brought up to date and reset, and reference is made to recent work on nutritional anæmia, the occurrence of undulant fever in this country, and the requisites of a "safe" milk-supply. The book is attractively printed, and is designed to be comprehensible to the intelligent laywoman. It should continue to be popular amongst all those concerned with the rational feeding of infants and children.

## Chirurgie de l'œsophage

By RAYMOND GRÉGOIRE, Professeur à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1935. Pp. 179. Fr.35.

IN this book the present position of the surgery of the œsophagus is set forth with clearness and restraint. This is particularly true of the chapter on carcinoma. No exaggerated claims are made for radiation treatment and it is freely recognised that the problems of operative removal are not yet solved. The few successes which have occurred, whilst they establish the ultimate possibility of the procedure, are regarded as due to a happy combination of circumstances not under the control of the surgeon. Moreover, the author points out that dysphagia is usually a late symptom in the evolution of the disease. No less than seven times has he exposed the thoracic œsophagus with a view to resect a growth, only to find in each case that the extension to surrounding parts was so great as to cause him to abandon his intention. The accounts of other diseases of the œsophagus—diverticulum, peptic ulcer, and cardiac achalasia—are extremely good and the sources of information are given in admirable bibliographies. The relation of the sympathetic to cardiospasm is not mentioned, but admittedly this new surgery is not yet sufficiently established for any reliable deductions to be made.

## Clinical Atlas of Blood Diseases

Third edition. By A. PINEY, M.D., M.R.C.P., Assistant Physician, St. Mary's Hospital for Women and Children; Physician, St. Pancras Dispensary; and STANLEY WYARD, M.D., M.R.C.P., Physician, the Cancer Hospital, and Princess Beatrice Hospital. London: J. and A. Churchill Ltd. 1935. Pp. 110. 12*s.* 6*d.*

A THIRD edition of this clinical atlas suggests that the book is appreciated by students and practitioners. As the authors state in their preface "the progress of hæmatology since the publication of the last edition has been in the direction of clinical rather than morphological elaboration. For this reason no new plates have been added, but the whole of the text has been revised." In the course of the revision, however, no mention is made of the important work done both in this country and in America on erythroblastosis fœtalis, showing the probable relationship between icterus gravis neonatorum, hydrops fœtalis, and anæmia of the new-born. An account of the extremely characteristic Donath Landsteiner reaction in paroxysmal hæmoglobinuria might be of more help in the diagnosis of this condition than a coloured print of the blood film, which is in no way peculiar. The section on abnormalities affecting the white cells contains an account of agranulocytosis and mention is made of monocytic leukæmia. The glossary has been brought up to date by the inclusion of such terms as achresthic anæmia. J. R. Ford's illustrations are beautiful and accurate.

## Crook Frightfulness

By A Victim. Birmingham: Moody Brothers. 1935. Pp. 196. 7*s.* 6*d.*

THIS painful narrative is an account of the persecution to which its author believes himself to have been subjected since 1922 by powerful and ubiquitous enemies. He tells his story vividly and is passionately convinced of its truth. Few such detailed first-hand accounts as this have been published. Much of the book is taken up with repetition of the insults and mysterious interference which the author noticed wherever he went, so that he was driven, as he says, "around the circuit of the globe in my efforts to escape." Although the narrative appears to have been edited, it is an interesting document, especially for the psychiatrist.

# THE LANCET

*LONDON: SATURDAY, OCTOBER 12, 1935*


## HEALTH AND DISEASE ON PAPER

WHEN it comes to the preservation of his own health and happiness is the doctor in a better position than the ignorant layman? In an ideal society would everybody go through the whole medical curriculum so as to have a fair working knowledge of health and disease as they affect himself and his friends? Or if not, would the Utopians be content with teaching everyone elementary biology, first aid, and home nursing? The question seems fanciful, but the medical profession may reasonably be expected to hold considered views on What Every Intelligent Layman Ought to Know. Sir HENRY BRACKENBURY has lately acted on some of his own opinions by producing a book, "Patient and Doctor,"[1] which is primarily an attempt to make its non-medical readers coöperate more usefully with their advisers. His object is not so much to sow the seeds of medical wisdom as to make the ground receptive for such seeds as practitioners may later see fit to scatter. Dr. HARRY ROBERTS on the other hand has been far more ambitious. He believes that the ideal layman would know a great deal about his body and mind long before the doctor's car was heard coming up the drive; and the scope of his "Everyman in Health and in Sickness"[2] is such that it may be said not only to prepare the ground but also to sow a good representative collection of seeds and show the reader how to do the reaping. One critic may say that if all this is to be bought for 12*s.* 6*d.* there will be nothing left for the doctor to do except to bless the crops and attend the harvest festival. Another will point out that neither farming nor medicine can be learnt out of books, and that the chief effect will be to make the layman more uncomfortable about himself and his affairs and more prone to take his troubles (complicated by a little knowledge) to the expert. Whichever is right we believe Dr. ROBERTS should have credit for attempting such an immense task and for partial success on an important scale. To be fair the critic should say to himself: If I do not like this book what sort of book (if any) would I have tried to write myself? What in fact should the intelligent layman know, and how, under the circumstances of the present day, should he get to know it?

Our own attitude towards "health education" was declared some years ago in a leading article[3] which quoted respectfully some very pungent sayings by certain leaders of the profession but added: "Is it true that medicine has nothing to offer the public beyond St. Paul's counsel of temperance? Faced with the distresses of modern society, must we remain silent about fresh air, fresh food, and flies? . . . Must we really leave the slums to their unconscious health for fear a little enlightenment may make them over-anxious?" Dr. ROBERTS and his unnamed collaborators have done much more than write about air, food, and flies—so much more, indeed, that they offer great scope for disagreement as well as for praise. In our opinion their book would be better if it were not so long and comprehensive, and though the careful reader will feel admiration for so lucid an account of human natural history he will like some parts much better than others. In describing the anatomy and physiology of man a lavish use is made of technical terms, and there are several sections of the book—notably one on metabolism and food utilisation—whose perusal ought to bring the reader up to M.B. standard at least. "We must now see," says the author cheerfully, "how the body deals with the amino-acids which it absorbs from the digestion of protein." But the average reader is not going to admit a necessity so painful, and he will certainly do better to browse quietly in the chapters on the mind, on the upbringing of children, on birth control, on danger signals, and on nursing the sick. Unfortunately, being human, he may find himself under a morbid compulsion to read also about the endocrine system and its disorders or about the other diseases described at greater or less length in the later part of the work. There are a few statements in these sections to which we may take exception: for example, is it true to say that hare-lip is hereditary; that tuberculous meningitis is always fatal; that a child with measles is best treated in a fever hospital; that boracic fomentations should be used for boils; or that infantile paralysis is "common" in children of two or three years old? There is also food for needless anxiety in remarks like "migraine is a condition which some think is related to epilepsy." But the fault, if there is one, lies not so much in the framing of an occasional alarming or doubtful sentence as in the whole attempt to tell the public about disease. There are many minor disorders with which everyone should be familiar, and most of them are described very well in Dr. ROBERTS's compilation. But when more serious or incurable illness is in question the patient and his family should learn their facts from the family doctor and not from the book-shelf. According to this view the ordinary home does not require a work of reference containing accounts of disseminated sclerosis, dementia præcox, or auricular fibrillation, and the present work is least attractive where it most closely approaches the old style of popular medical encyclopædia whose motto was "everyman his own doctor." The authors would have done well perhaps to bear in mind more often the (probably spurious) Arab proverb: It is good to speak the truth; but it is better to *know* the truth and speak about date-stones.

[1] Reviewed in THE LANCET, Sept. 28th, pp. 722 and 729.
[2] Everyman in Health and in Sickness. By Dr. Harry Roberts and Others. London: J. M. Dent and Sons, Ltd. 1935. Pp. 739. 12*s.* 6*d.*
[3] THE LANCET, 1931, i., 357.

So much for the informative side of the new volume. But that is only one side; for the writers naturally and rightly set out to be persuasive as well as instructive, and their aim—their propagandist aim—is to make their fellows healthier and happier. Propaganda has a bad name; nor do we want (as Sir KINGSLEY WOOD says in his message commending the present Health Week), "a nation of people who are forever thinking about their health." It is also true, as Lord HORDER has pointed out, that maxims drawn up for guidance in personal hygiene should embody general principles and avoid particulars; "since they go to all and sundry, to the young and to the old, to the fat and to the lean, to the blonde and to the brunette, to the tall and to the short, to the phlegmatic and to the sanguine, to the asthenic and to the sthenic."[4] At the same time none of us would lightly surrender the knowledge of ourselves and our maintenance which we have gained from our medical training and experience, and we can only wish Dr. ROBERTS well in his attempt to transfer something of his own knowledge, acquired in a lifetime of general practice, to those who very obviously stand in need of it. We would go further. If there are chapters in his book which would make a very suitable revision course for the student entering his final examination there are also chapters—and many of them—which would be more than useful to the successful student who is shortly to apply his knowledge to practice: they would draw together much that may be stored in his mind but has not achieved unity. Those whose eyes are looking chiefly for occasion to differ will find much that will stand in the way of a proper appreciation of Dr. ROBERTS's volume—from the photographic illustrations onwards. It does not take long to discover that some of those who write under his editorship hold heterodox views on the dangers of constipation, over-eating, cane-sugar, excessive sleep, and tight collars; rightly or wrongly we may not readily accept the advice to clean the nose with soap and water every time we deal with our face, or to wash the leather band inside our hats at least once weekly. But anyone who takes the trouble to examine the book at all carefully must recognise a fine sane purpose behind it—a purpose often finely executed and capable of working great good. There is much here that the intelligent layman (and his doctor) really ought to know but have never before been told so clearly.

## SEPTIC ATMOSPHERES

THE existence of special wards for burns at the Glasgow Royal Infirmary has enabled Dr. ROBERT CRUICKSHANK to carry out a study the results of which are of far-reaching interest.[5] The main fact which emerges is that within a short time of admission to the ward the majority of burns become infected with hæmolytic streptococci. Septic infection, as Dr. CRUICKSHANK observes, must be regarded as the source of the toxæmia and fever which appear on the second or third day, and constitutes the principal danger after the initial stages; the idea that the absorption of protein-cleavage products accounts for unfavourable manifestations of this kind is no longer tenable. An observation of less apparent importance but of equal interest is that the proportion of patients with hæmolytic streptococci in their throats rises from 6 per cent. on admission to 25 per cent. during the first week in hospital. If this observation should be confirmed in a study of a larger number of cases it will repay careful consideration. The facts that hæmolytic streptococci could easily be cultivated from the air and dust of the ward, and that tonsillitis and scarlet fever occurred more frequently than in other wards, point in the same direction. There is surely some factor concerned in the spread of infection under these conditions which has not been recognised. A single throat carrier might well, according to our present knowledge, account for the infection of all the large vulnerable surfaces represented by a ward full of burns, or it might be suggested that the spread of this infection is due in part at least to indirect contact. But only increasingly heavy aerial infection can explain the condition of the air itself and the rise in the throat carrier-rate. Unless it is assumed that patients' throats become infected from their own burns (and the mechanism by which this occurs, if it does, requires elucidation), this loading of the air with streptococci remains unexplained. It has yet to be demonstrated that aerial dispersion could possibly occur from a moist infected surface unconnected with the upper air-passages and innocent of any capacity to form droplets or other air-borne particles, and the mechanism of such dispersion is very difficult even to picture. If the transference of streptococci from person to person is achieved by some unsuspected route or favoured by some unknown factor, this would naturally have some bearing on the problem of puerperal sepsis. There is another field of medicine in which the activities of streptococci are without question remarkably favoured by hospital conditions. It is well known that clean operation sites are particularly liable to septic infection in ear, nose, and throat wards. Here there is no difficulty in explaining everything in terms of aerial spread, the vulnerable operation site becoming in its turn a source of further air-borne infection.

Nevertheless a study of the carrier-rate and of the bacteriology of the air itself in such wards might furnish illuminating data. Is there no method, short of segregation, which will obviate this very serious danger? The air in cinemas and even sometimes in trains is treated in an elaborate way for consumption by healthy people; air can be sterilised and adjusted to whatever conditions of moisture content and temperature may be considered desirable, and by a suitable system the direction of its currents can be controlled. Could not these devices, hitherto utilised chiefly to secure the comfort of theatre-goers and travellers, be applied to ensuring the safety of patients in hospital wards? Even if the physical condition of the air

[4] Ibid., 1926, ii., 795.
[5] Jour. Path. and Bact., 1935, xli., 307.

were without influence on the survival of bacteria in it, a more rapid rate of exchange than window ventilation can secure, and such control of currents that air infected by one patient cannot simply drift across the beds of others, should greatly diminish risk from this source, and at least secure an atmosphere from which hæmolytic streptococci cannot be grown as readily and regularly as the colon bacillus from sewage.

## MEDICINE AND THE WELSH LANGUAGE

AT the recent annual meeting of the Association of Welsh Insurance Committees held at Barmouth, Mr. F. LLEWELLYN-JONES, M.P., expressed the view that the peculiar health problems of Wales were not receiving due attention. That these exist is beyond doubt chiefly because of the principality's predominantly rural character, its mountainous and sparsely populated areas, and its small counties of low rateable value, but also because of the high proportion of the people who can or prefer to speak only Welsh. Mr. LLEWELLYN-JONES attributed this alleged neglect to the fact that Wales was really governed in public health matters by the English Ministry of Health, although a Welsh Board of Health existed in name. When the Welsh Insurance Commission was constituted in 1911, they had been given to understand that its business would be to reform the whole of the health services of the principality and consultative committees had been set up to explore the whole field. Their reports, prepared after great deliberation, had been shelved. Welsh insurance committees were not consulted when new regulations were in preparation. Circulars issued from the Welsh Board of Health were mere replicas of those issued by the Ministry in England. Mr. JOHN ROWLAND, chairman of the Welsh Board, who followed him, drew attention to the improvement in health derived from the establishment of the modern health services, emphasising the decline of tuberculosis. Wales is unique in having a centrally administered tuberculosis scheme, all the counties and county boroughs having delegated their functions to the Welsh National Memorial Association. Mr. ROWLAND pointed out that, while the fall in the death-rate from tuberculosis had been less rapid in Wales than in England, it had been greatest in the western counties where it had formerly been exceptionally high. He made passing reference to the difficulty experienced by the Memorial Association in finding suitably qualified medical men and women who could speak the Welsh language and urged his listeners to take an interest in the Welsh National School of Medicine.

While some of Mr. LLEWELLYN-JONES'S complaints might equally well be voiced in England and Scotland, there can be no question that knowledge of the Welsh language is an asset to those seeking appointments in Wales. Of a total population amounting to 2,593,332 persons in 1931, 97,932 spoke Welsh only and 811,329 spoke both English and Welsh, of whom, no doubt, many found it easier to express themselves in the native language. The proportion of monoglot Welsh has fallen from 151 per 1000 in 1901 to 40 in 1931, but the decline in the number speaking both languages, which was noticeable but not so rapid up to 1921, has been arrested. Even among those of ages 15 to 24 years, among whom most of the medical students will be found, a proportion of 315 per 1000 speaking both languages would lead one to anticipate no difficulty in supplying the principality's need for Welsh-speaking officers. It has to be remembered, however, that certain other factors may invalidate this conclusion. The medical school is situated at Cardiff where Welsh is not customarily spoken (only 50 per 1000 in that city speak Welsh), and while Glamorgan has a comparatively large Welsh-speaking population, the proportion is low in the adjacent county of Monmouth and the town of Newport, from which students are also drawn. On the other hand, a large number of students from North Wales, where twice as many speak Welsh as in the South, graduate in Liverpool and other universities, so that a supply of candidates who have this special qualification might be expected from these sources, and in fact some do return to appointments in Wales. Probably the real trouble is that most of the Welsh students find practical difficulty in studying for the post-graduate qualifications required for official posts, and choose to enter private practice for financial reasons. It can readily be understood that local authorities and other statutory bodies, even though they consist almost entirely of Welshmen, find it impossible to make language the governing consideration in deciding appointments. However much they are inclined to favour Welsh-speaking candidates, the efficiency of their services must be their first concern.

## ST. GEORGE'S HOSPITAL

A GIFT of an unusual kind has been made to St. George's Hospital, London, in aid of the rebuilding fund. The donor, who remains anonymous, has offered to pay for the preparation of preliminary plans for the new hospital. If these plans are accepted by the rebuilding committee his gift will be increased to cover the architect's fees for the whole work. It is estimated that the rebuilding fund, which now stands at £140,000, will thus benefit to the extent of a further £30,000 at least, and the committee has gratefully accepted the proposal. The new hospital is to be erected on the present site at Hyde Park Corner, and the appeal issued is for £1,000,000—a sum which should allow a margin for allocation to the endowment fund. We understand that the architects will be Messrs. Elcock and Sutcliffe of London.

It is hoped that the new gift will enable the committee to begin rebuilding at a much earlier date than was expected.

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ROYAL MANCHESTER CHILDREN'S HOSPITAL.—This hospital, the largest of its kind in the North of England, will have to curtail its work unless there is an immediate response to its centenary appeal for £100,000. Since the appeal was made, four months ago, over £10,000 has been received. There are more than 100,000 attendances yearly at the out-patients' department.

# ANNOTATIONS

## MISFORTUNE PARTIALLY RELIEVED

THE Royal Medical Benevolent Fund has a good name—not only in the sense of reputation but literally. It is a spacious name, interpreting charity in its better sense. Its practical interpretation is still, however, based on a subscription income nothing like sufficient for the purpose. The annual report shows that last year this income was £11,092: returning economic prosperity and increased effort were reflected in an increase of £1676 over 1933 and in the support of 869 new subscribers. But even so the Fund is very far from adequate to meet the demands made upon it. Altruism apart, its activities are the personal concern of nearly every member of the medical profession; for which of us can feel completely confident of maintaining financial or even physical security for ourselves and our dependents in this kind of world? During 1934 the Fund gave financial help to 670 people to whom disaster was no longer a remote possibility but a dreadful fact. At present their needs can be met only to the extent of an annual grant of £40 to a practitioner and £26 to a dependent, and the support of the whole profession is needed if misfortunes in our ranks are to be relieved with a little more decent generosity. Next year will be the centenary year of the Fund, and the committee have considered carefully the idea of obtaining money by some public appeal, but have rejected it. Members of the profession will no doubt agree with this decision, feeling that we owe a service to our less fortunate colleagues which we cannot ask the public to share. The administrators of the Fund intend to invite all medical practitioners to become annual subscribers before the end of 1936, making this a fitting celebration of the centenary of a great charitable organisation. Meanwhile we may look for a wide response to Sir Thomas Barlow's Christmas appeal appearing in our correspondence columns this week.

## PLASMA PROTEINS AND N.P.N. IN RHEUMATISM

IN all clinical investigations it is important to choose controls of the same age and social circumstances as the group to be studied. The need for this precaution is well illustrated by a recent analysis of the plasma proteins, non-protein nitrogen (N.P.N.), and sedimentation rate in chronic rheumatic disorders by Dr. Aldred-Brown and Dr. Munro of Bath.[1] They have been able to demonstrate wide variations in the values obtained in (*a*) a group of healthy young adults, (*b*) subjects suffering from chronic rheumatic disorders, and (*c*) non-rheumatic persons whose age and economic stresses resembled the preceding group of chronic rheumatics. The range of values in Group (*b*) and Group (*c*) resembled one another fairly closely, but there were considerable differences between Group (*a*) and Group (*b*). The investigators suggest therefore that several factors, of which increasing age and economic stress may possibly be two, rather than the rheumatic processes, are at least in part responsible for these differences. Osteo-arthritis was found to show the least deviation from the normal. The mean average of the fibrinogen percentages in spondylitis ankylopoietica and rheumatoid arthritis was high, and also the mean average of the N.P.N. percentages in rheumatoid arthritis. The sedimentation rate was also higher in patients with the latter condition than in other groups, though it is much increased in all types of arthritis. Aldred-Brown and Munro suggest that the lowness of their globulin and fibrinogen figures compared with those of other observers may possibly be due to the fact that their figures for total protein are lower than those usually recorded. Their figures for non-protein nitrogen are also lower. The significance of the variations in the sedimentation rate are to be discussed in a later paper, which will be in some sort a sequel to one published in our own columns last year.[2]

[1] Aldred-Brown, G. R. P., and Munro, J. M. H.: Quart. Jour. Med., 1935, iv., 269.

## ASSOCIATION OF LOCAL GOVERNMENT MEDICAL OFFICERS

SIXTY-FIVE years ago the medical officers employed under the old Poor Law banded themselves into an association to ensure for their members proper remuneration and conditions of service. Six years ago, after the passage of the Local Government Act, the scope of the association was widened to include all medical officers working for municipal authorities, under the comprehensive title of The Local Government Medical Officers' Association of England and Wales. The Association supports the employment of part-time assistance medical officers, as opposed to a whole-time medical service, and is in favour of free choice of doctor in areas where vacancies occur and the local medical profession has approved this form of service. The Association is desirous of letting it be widely known that it will admit as an associate any registered medical practitioner who, without being a local government medical officer, accepts the principle of private practitioners carrying on public assistance medical service either by the part-time salaried method or by the free choice method where so adopted. Such associates pay a fee on joining of 2*s*. 6*d*., but not the annual subscription of 10*s*. At present the officers of the Association are: president, Dr. Alfred Cox; chairman of council, Dr. Percy Spurgin; hon. secretary, Dr. M. W. Renton, The Bridge House, Dartford, Kent.

## MULTIPLE MYELOMA

WHEN the extent of involvement of the bone-marrow in multiple myeloma is considered it is a matter for surprise that anæmia is not a more pronounced and characteristic clinical feature of this disease. Possibly it calls for further attention in diagnosis. Thus U. Spiller and A. Revetas[3] have recently emphasised the importance of multiple myeloma as a cause of "cryptogenic anæmia." They say that in 12 out of 432 cases of anæmia seen at the Martin Luther Krankenhaus in Berlin since 1931 the cause of the anæmia was obscure, and that 6 of these were later found to be examples of multiple myeloma. Leucopenia with relative lymphocytosis may precede both symptoms and the X ray changes of myeloma. Unfortunately in the 4 cases annotated by these authors the blood picture is not described in detail. In the interesting case published by C. F. Sweigert[4] examination of the blood revealed a macrocytic anæmia: myelocytes, normoblasts, and on one occasion myeloblasts, he writes, were present. We have here evidently the leucoerythroblastic anæmia of Vaughan and Turnbull. Other interesting features

[2] The Blood Sedimentation Rate and the Plasma Proteins, THE LANCET, 1934, i., 1333.
[3] Deut. med. Woch., 1935, lxi., 1305.
[4] Amer. Jour. Med. Sci., 1935, cxc., 245.

in this case were the existence of hyperproteinæmia, associated with excretion of Bence-Jones protein, and also clinical evidence of chronic nephritis combined with low blood pressure. The peculiar type of nephritis that is found in multiple myeloma has been neglected both by pathologists and clinicians until recent years. It is therefore of interest that Sweigert says of his case that "multiple myeloma was first suggested by the peculiar blood picture and evidences of an atypical nephritis. Although these are by no means constant or pathognomonic features of the disease their combination should always demand consideration of myeloma." The kidney picture has been further examined by American observers [4] in a case which came to necropsy at the Johns Hopkins Hospital. The peculiar tubular casts and the foreign body reaction excited by their presence are stressed by these authors as characteristic of the condition, and the nature of the functional disturbance is regarded by them as obstructive in origin. Attempts to reproduce this specific nephritis in dogs, rabbits, and mice by repeated injections of Bence-Jones protein were unsuccessful, but it is possible that the negative results were due to the shortness of the periods over which the injections were carried out.

## PROF. JUNG IN LONDON

THE Institute of Medical Psychology is rapidly becoming known as a centre of energetic research and instruction in psychology, both practical and theoretical. The visit of Prof. C. G. Jung to the Institute last week, where he delivered five seminars on "Fundamental Psychological Conceptions," was an important event in its short but increasingly distinguished annals. Prof. Jung's teaching is still too little known in this country. His books deal little with therapy; they are largely devoted to the explanation of the substantial body of knowledge he has helped to build up during the last 30 years on the racial and historical components of the human unconscious mind. This is his main interest but, at the same time, he is a busy practitioner, and those who imagine that he is chiefly concerned with mystical philosophy are profoundly mistaken. Some may have had this view effectively shattered by their experience of him last week. The audience had been limited to about a hundred of the leading psychotherapists of the country, with a sprinkling of medical graduates and university workers. It was, therefore, composed of people well acquainted with his books, and when he spent the first two lectures on a discussion of psychological types and the association test—and even expressed reluctance to answer questions that went deeper—many of them naturally felt that he did not appreciate either the intense interest which English psychotherapists take in his work or the overwhelming difficulties which they have encountered in making contact with him and learning the exact meaning and practical applications of his work. When this unrest had expressed itself in the medical discussion which followed the second seminar, Prof. Jung set himself to meet the need, and the last three lectures were a wealth of good things.

Much as his hearers benefited from listening to Prof. Jung's brilliant account of his explorations into the vast country of the human mind, they must have benefited equally from the intimate contact of five consecutive, intensely active evenings with his personality. They listened to this robust, burly man, with his white hair and moustache, ruddy face, and general appearance of exuberant health and good spirits, as he lectured in his own inimitable way—sometimes easy-going, sometimes jovial, with bursts of infectious laughter, often vigorous and trenchant, occasionally stern and uncompromising. Prof. Jung not only has material to impart but has the rare gift of knowing very well how to impart it. His privileged audience had a treat which they will not soon forget, and they will look forward eagerly to his next visit.

[4] Forbus, W. D., Perlzweig, W. A., Parfentjev, I. A., and Burwell, J. C.: Bull. Johns Hopkins Hosp., 1935, lvii., 47.

## THE POTATO

A BROCHURE [1] issued by the Potato Marketing Board makes extensive claims for the potato as an article of food, and not one of these claims is without foundation. Compared with the cereals, potatoes owing to their high water content are a less cheap form of energy producer, but they have so many other advantages that it is unfair to make the comparison purely on the basis of energy production. The quality of potato protein is at least equal, if not superior, to that of the cereals, and in vitamin content and salt balance it surpasses them. Potatoes supply vitamin C and the vitamin-B complex, and though their supply of vitamin A as carotene is small, judicious selection and propagation of yellower varieties might be able materially to increase it. Neither pellagra nor beri-beri is recorded in persons subsisting mainly on potatoes, showing that the vitamin-B complex is well supplied. The good vitamin-C content of the potato is perhaps one of its greatest assets. The tubers are capable of storage for many months, throughout which the vitamin-C content is well maintained; for persons on poor and monotonous diets over long winters, the potato must be one of the greatest protective factors. The occurrence of scurvy in Great Britain in the spring of 1917, when the potato supply fell short, witnessed to this. Potatoes yield an alkaline ash and are therefore preferable to cereals in diets where a preponderance of base-forming principles is desired. Some at least of the cereals appear to be actually rachitogenic and antagonistic to normal healthy tooth formation; the potato, it seems, has no such property. Whether this property is due to a toxin or to the presence of a large proportion of the phosphorus in cereals in a non-available form, and even in a form which militates against the absorption of calcium also, is still not quite certain.[2] The well-known and astonishingly favourable results of the survey of the teeth, made recently among the islanders of Tristan da Cunha, were a striking testimonial for the potato; for it, far more than any cereal, is the staple energy producing food of the island. There seems little doubt that a considerable proportion of the cereal in the diet of most people in Great Britain could be advantageously replaced by potato.

Even if replacement of cereal in the diet by potato may not be easy to achieve, a second publication of the Potato Marketing Board [3] shows that simple addition of more potato to the diet is made possible merely by reducing the price. The Board carried out an experiment to ascertain whether lowering of price of a staple foodstuff would increase consumption. Most housewives with a slender housekeeping allowance could presumably have given an answer without needing any experiment to settle the question. It was however desired to obtain an

[1] The Potato as an Article of Diet. By H. K. Archbold, D.Sc. Lond., D.I.C., A.I.C. London: Potato Marketing Board, Africa House, Kingsway, W.C.2. Pp. 20. 6d.
[2] Bruce, H. M., and Callow, R. K.: Biochem. Jour., 1934, xxviii., 517.
[3] An Experiment in the Distribution of Potatoes at Bishop Auckland. Pp. 32. 1s.

answer even in the most unlikely conditions, where the price of the foodstuff was already comparatively cheap so that the total reduction in expenditure would only be small. It was also desired to make the experiment where purchasing power was very small. A mining village in the county of Durham was therefore selected as being one where the percentage of those unemployed for continuous long periods was very high. There were 2437 unemployed (insured) male workers, with 3799 dependants, in a population of 5000 insured workers and 19,000 total inhabitants. The experiment was confined to the families of the unemployed and was carried out in February and March. Families containing up to three persons could purchase 1½ stone of potatoes weekly, and larger families proportionately more. Instead of paying 10½*d.*, the ruling price for this amount, the 1½ stone could be bought for 6*d.*, thus saving 4½*d.* a week. It was also particularly desired to test how the trade of retailers of potatoes in the area would be affected and the coöperation of the shopkeepers was secured. The full number of vouchers for cheap potatoes was issued and only 7·3 per cent. of these were not used. The normal sales of potatoes in the retail shops fell by 40 per cent., but the total consumption in the whole area rose by 96 per cent. When this figure is corrected for any possible source of error, an increased consumption of 69 per cent. is still shown. The main thesis—that increased consumption will result from lowering the price of an already cheap staple foodstuff, when purchasing power is very small—appears therefore to be proved, as it was scarcely possible to doubt that it would be. But to implement this conclusion is another matter.

## MEDICAL STUDENTS ABROAD

ACCORDING to a report [1] by the Council on Medical Education and Hospital it appears that 710 Americans enrolled as medical students in schools outside the United States in the academic year 1930–31. If still studying abroad these students will probably finish their course during this year or next, and it may be expected that most of them plan to return to the United States to practise. It was a consideration of the problem created by this migration that led the Federation of State Medical Boards to harden their hearts against American students matriculating abroad and not to admit them to any licensing examination without producing satisfactory evidence of pre-medical education. The numbers in question are still by no means negligible, for during the last academic year 1934–35 there were known to be 1471 American students training in 97 institutions abroad, and 199 who graduated or completed their medical training during that time. The report contains a caustic remark that of 502 students whose names were supplied to the Association of American Medical Colleges this year 106 had made application to medical schools in the United States without success since 1931, and it is hinted that some of these students have signified their inability to obtain a medical education in the U.S.A. by rejection at 25 different medical schools. Various European countries have, it seems, sent representatives to the U.S.A. to discuss measures for dealing with the students who come over, and it may be interesting to note which European schools at the present time especially are offering hospitality to American students. For the academic year 1934–35 the highest numbers of students were enrolled, in descending order, at Edinburgh Royal Colleges 190, University of Rome 161, University of Bern 114, University of Basle 83, University of Zurich 72, University of St. Andrews 69, University of Paris 63, Friedrich-Wilhelm University, Berlin, 62. A footnote to the table of figures suggests that the totals of 1471 enrolled and 199 who completed course should be larger, inasmuch as the following schools, viz., Vienna, Bologna, Naples, St. Mungo's, Glasgow, and Geneva, which previously reported large numbers of American students, do not now figure in the list.

[1] Jour. Amer. Med. Assoc., August 31st, 1935, p. 688.

## SKIN DISINFECTION

USERS of Harrington's solution may be interested to know that its virtues have been rediscovered in the United States. J. A. Vaichulis and Lloyd Arnold, who make no reference to Harrington's solution, have presumably repeated the steps in argument or experiment which led to its formulation, for the skin disinfectant evolved by them [1] contains almost identical amounts of mercuric chloride, hydrochloric acid, and alcohol; it differs in containing also 10 per cent. of acetone and 0·2 per cent. of chrysoidin Y, the former serving to dissolve fat and thus assist penetration, the latter giving characteristic colour and some added disinfectant power. The phenol coefficient of this solution, using *Staphylococcus aureus* as the test organism, was found to be 357. It is cheaper than tincture of iodine and much cheaper than solutions of other mercurial compounds such as mercurochrome or metaphen, and it is said to have been used successfully not only for preparing the skin in 185 cases of operation on the neck or abdomen, but in 300 cases of gunshot wounds and automobile accidents, another matter altogether, since the sterilisation of intact skin and the disinfection of a wound are quite different problems. These claims involve two questions which are in a highly unsatisfactory position. One is the true disinfecting capacity of mercury salts under clinical conditions. Although Geppert exposed the fallacy in Koch's original experiments with mercuric chloride no less than forty-five years ago, numberless papers have continued to appear up to the present day reporting experiments in which inhibitory as distinct from bactericidal action is ignored. The conditions of a test of mercuric chloride can be so arranged as to give almost any result, but the nearer those conditions approach to those obtaining in the body, which is tantamount to saying the richer the medium employed, the less does its disinfecting power appear to be. It is very desirable that a test suitable to the peculiar action of the heavy metals should come into general use. The second question does not arise directly from this paper, since no observations of the kind were made by Vaichulis and Arnold; it concerns the proper method of determining whether or no skin has been disinfected. Various authors have scraped or swabbed treated areas; Tinker and Sutton [2] excised strips of skin from the edges of operation wounds, and others have cut portions of skin from animals, to furnish material for cultivation. Colebrook's method [3] differs from all of these in securing adequate dilution of the inoculum and in furnishing quantitative results. This is admittedly a proceeding not lending itself to exact definition, but a nearer approach to uniformity of method would make it possible (which at present it is not) to compare the results obtained by different experimenters.

[1] Surg., Gyn., and Obst., 1935, lxi., 333.
[2] Jour. Amer. Med. Assoc., 1926, lxxxvii., 1347.
[3] Jour. Obstet. and Gyn. of Brit. Empire, 1933, xl., 966.

## HAROLD WARD DUDLEY, F.R.S.

THE death on Oct. 3rd of Mr. H. W. Dudley, Ph.D., F.R.S., at the early age of 47, removes one of the outstanding research workers in biochemistry as applied to medical problems. As a student at Leeds he came under the influence of J. B. Cohen, one of the first organic chemists in this country to see the promising future that lay before biochemistry. A research scholarship enabled him to spend two years in Berlin working at the structure of purines under Wilhelm Traube in Emil Fischer's laboratory; from there he went to Herter's laboratory in New York where he met H. D. Dakin, another of Cohen's old students, and entered into a fruitful collaboration with him. Most noteworthy perhaps was the discovery of the enzyme glyoxalase, which rapidly converts methyl glyoxal at body temperature to lactic acid. During the late war he was attached to the R.A.M. College in London, and was sent to the United States in charge of an anti-gas mission. On his return to England he joined the staff of the Medical Research Council as chief biochemist, a post that brought him into close contact with colleagues working in many different fields of medical research, to whom he gave freely of his deep knowledge of chemistry and his skill in complex analysis.

The first problem presented to him was that of the chemical nature of the constituents of the posterior lobe of the pituitary body; he was able to show that the pressor constituent and the constituent responsible for causing contraction of uterine muscle were separable by chemical means. He then turned his attention to the newly discovered insulin, and was the first to devise a method of preparation (still used in its manufacture) which gave a dry stable product having ten times the activity of the original crude material, and to suggest that the hormone itself was a complex protein derivative—a conclusion amply confirmed later by other workers. Meanwhile in collaboration with O. Rosenheim and W. W. Starling he proved the constitution of spermine and spermidine, two bases now known to be general tissue constituents for which no physiological function can yet be even suggested. The importance of certain vasodilator constituents of the animal body with a histamine-like action for the normal functioning of the capillaries had long been emphasised by Sir Henry Dale. Dudley, in collaboration with W. V. Thorpe, was able to identify the substance having this action with histamine itself, which was isolated from several organs under conditions which precluded putrefactive changes. Next came a brilliant research with Dale which led to the isolation of acetylcholine from horse and ox spleen. Here Dudley's analytical skill was shown at its best; his method of separating this unstable substance from choline and other substances present by means of their chloroplatinates bears the stamp of genius.

Dudley's last research, which was fortunately brought to a successful conclusion before his untimely death, dealt with the active principle of ergot. It had been assumed that the substances active towards the uterine muscle were the alkaloids ergotoxine and ergotamine, but in 1932 Chassar Moir obtained direct evidence that aqueous extracts of ergot free from these complex alkaloids were active when administered by the mouth. The active principle must therefore be different from any of those known hitherto and Dudley undertook a chemical investigation of this unknown substance in association with the direct clinical observations of Moir. The result was the isolation of a new water-soluble alkaloid, ergometrine, which in minute doses has the characteristic activity of ergot. This discovery of ergometrine, which solves a long-standing problem of the pharmacology of ergot and its use in therapeutics, has aroused widespread interest, as is shown by the fact that it has already been confirmed, in effect, in three other laboratories where research was independently in progress. While his main interests were definitely in the laboratory Dudley did not neglect those other biochemical activities which he was called upon to perform. From 1922–24 he was secretary of the Biochemical Society, and from 1925–30 joint editor with Prof. Harden of the *Biochemical Journal*. He was also for many years an assistant editor of *Chemical Abstracts* and was responsible for the high level of the section of abstracts dealing with biochemistry. His great attainments were recognised in his election to the fellowship of the Royal Society in 1930.

## EARLY DIAGNOSIS OF AORTIC SYPHILIS

SYPHILIS of the aorta usually causes death within a few years of its clinical recognition. Affecting most often the ascending portion of the vessel it is liable to damage the mouths of the coronary arteries and the cusps of the aortic valves. If the inflammatory process is confined to the transverse or descending part of the arch, these vital structures escape and the prognosis is much less grave.

There is reason to think that the aortic wall is invaded early in the course of syphilitic infection, and that it is not until the destructive process has been at work for many years that symptoms arise and the diagnosis of aortic syphilis is made. Hence the relatively poor results of treatment. In many diseases subjective symptoms, indicating altered function, precede any detectable alteration in structure. In aortic syphilis, however, it has been suggested that a structural change may be recognised long before symptoms arise. E. P. Maynard and co-workers[1] claim to diagnose such cases radiographically, and they have been able to investigate 346 patients by working in coöperation with a syphilis clinic, and investigating the cardiovascular system of every patient attending it, irrespective of the stage of the disease and the symptoms complained of. All who have studied the X ray appearances of the aorta will appreciate, nevertheless, that the recognition of slight abnormality in the width of this vessel is not easy. The width varies with age and with the shape of the chest, and can be altered by other factors such as atheroma and high blood pressure. The investigators use the method of Vaquez and Bordet for measuring the vessel width, and after excluding cases with high diaphragm, scoliosis, a systolic pressure over 140 mm. Hg, or rheumatic aortic lesions, and patients with arteriosclerosis or over fifty years of age, they accept any measurement over 7 cm. as pathological, and one between 6 and 7 cm. also, if the ascending aorta is prominent. Of 77 patients examined within nine years of infection, 14 had aortic syphilis, but only 4 of these had symptoms referable to the lesion. The proportion with aortitis gradually increased with the period since infection, and so did the proportion of these with symptoms; out of 17 patients examined thirty years or more after infection 15 were found to have cardiovascular syphilis. In the 145 patients who showed evidence of aortic syphilis the mean interval between infection and evidence of

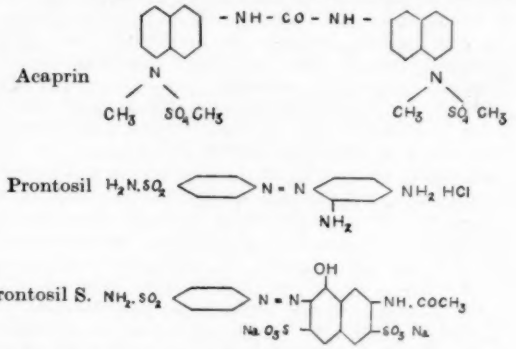
[1] Arch. Internal Med., 1935, lv., 873.

cardiovascular syphilis was twenty years; yet in 25 per cent. it was within ten years.

On the other hand, H. Schlesinger [2] thinks that certain clinical features are sufficient for an early diagnosis, even in the absence of X ray changes and of a positive Wassermann test. He attaches importance to certain signs usually considered too late in appearance to be of value, such as a distant first, and a ringing second aortic sound in conjunction with a low systolic pressure, aortic incompetence, and a systolic murmur at the aortic area. Symptoms which he regards as of great diagnostic value include dyspnœa of sudden onset and without obvious cause, and aortalgia—i.e., retrosternal pain not related to effort. Severe and long-lasting retrosternal pain, similar to that of atheromatous coronary occlusion, is also described, but it is stated that there is no sense of impending death, and that this is an important point in differential diagnosis. This symptom, however, is thought to-day to be neither constantly nor specifically related to coronary occlusion, and its absence cannot therefore be held to be of much help in diagnosis. Many of these symptoms obviously depend on lesions involving the aortic cusps and coronary orifices; and it would seem that when these complications have developed the pathological process has gone too far for diagnosis to be of much value.

## CHEMOTHERAPY IN STREPTOCOCCAL INFECTIONS

THE limitations of chemotherapeusis in controlling infective diseases are as remarkable as its successes. In a lecture delivered to the section of tropical diseases and parasitology of the Royal Society of Medicine on Oct. 3rd Prof. H. Hörlein, of Düsseldorf, elaborated the thesis that the possibility of combating infective diseases with chemotherapeutically active substances depends to a large extent on the structure of the pathogenic organism. The more highly developed the pathogenic organism, the more points for attack it appears to offer to the action of chemotherapeutic substances. Many infections with different kinds of protozoa and spirochætes have yielded to appropriate synthetic remedies, but bacterial infections generally have hitherto proved disappointingly resistant to such agents; and apart from the cure of contagious pleuro-pneumonia in horses with neoarsphenamine, we have, as yet, no chemotherapeutic substance which is active in virus diseases. Not only spirochætal diseases such as syphilis, relapsing fever, framboesia, and protozoal diseases such as trypanosomiasis, malaria, amœbic dysentery, and leishmaniasis, but epizoötics resembling human diseases are also relatively easy to deal with by synthetic drugs. Diseases of animals which, though attributable to protozoa, are not closely related to the tropical diseases of man are not amenable to such treatment. The most important of these epizoötics are the piroplasmoses, which are caused by babesiæ and theileriæ and are found not only in tropical and subtropical regions but also in temperate zones. Piroplasmosis is a condition marked by chronic irregular fever, enlargement of the spleen, bronchitis, œdema of the feet, subcutaneous hæmorrhage, and diarrhœa. It affects dogs, horses, sheep, and oxen. Trypan-blue, originally recommended by G. H. F. Nuttall for this condition has been used against the disease with some measure of success. Prof. Hörlein claims that a new compound Acaprin prepared in his laboratories is three times as active as is trypan-blue for piroplasmosis. Even more interesting, however, are his claims for two other new compounds Prontosil and Prontosil S., which are said to be potent against infections caused by hæmolytic streptococci. The results of the




administration of either of these two compounds, which can be given by mouth or by subcutaneous injection, to mice experimentally infected with this organism by the intraperitoneal route have been so encouraging as to lead to their trial in human patients. 1500 case records are now available in Germany of acute infections caused by the *Streptococcus hæmolyticus* and treated by prontosil or prontosil S. These infections included many cases of puerperal sepsis. The results as a whole were described by Prof. Hörlein as being strikingly successful, though exact figures are still to come. In the course of the discussion Dr. G. A. H. Buttle, working at the Wellcome Research Laboratories, described his own experience with the drug in infected mice. Whereas in Prof. Hörlein's series all the afflicted mice recovered, Dr. Buttle, using different strains of streptococci, was not successful in doing more than delaying death. But it emerged that certain differences in technique might have accounted for the discrepancy, and Dr. Buttle left no doubt in the minds of the audience that the new compound is therapeutically active; the point at issue is only one of degree. Dr. P. Manson-Bahr, who presided over the meeting and translated Prof. Hörlein's replies, which were made in German, with considerable skill, voiced the impression of all present that a contribution to chemotherapeutics had been made by Prof. Hörlein and his co-workers which might indeed prove to be monumental.

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NEXT Friday, Oct. 18th, Sir Henry Dale, F.R.S., will deliver the Harveian oration of the Royal College of Physicians of London. His title is Some Epochs in Medical Research.

THE Metropolitan Hospital last week announced its incorporation as a company limited by guarantee. The management committee will thereby avoid personal responsibility for the discharge of the hospital's liabilities, should the assets at any time be insufficient for the purpose. Such a responsibility, however remote, might, it was felt, deter persons whose services would be valuable to the hospital from joining the committee. When the Queen's Hospital for Children recently took a similar step we pointed out the convenience to a hospital of becoming an independent legal entity with an existence separate from the existence of the total of its members. The system of incorporated companies dispenses with the system of trustees.

[2] Arch. f. Inn. Med., 1935, xxvi., 341.

# PROGNOSIS

*A Series of Signed Articles contributed by invitation*

## LXXII.—PROGNOSIS IN CEREBRO-SPINAL FEVER

WITH a disease so variable in its course as cerebro-spinal fever, prognosis is often difficult to determine. Cases admitted to hospital in an apparently hopeless condition of coma may recover, while others, from all appearances mild in character, prove fatal owing to the subsequent development of internal hydrocephalus or of a progressive increase in the purulency of the cerebro-spinal fluid.

The various factors on which an opinion may be based are as follows :—

### GENERAL CONSIDERATIONS

*Early diagnosis.*—This factor is of paramount importance as the earlier the disease is diagnosed the earlier can serum treatment be instituted. All observers agree that early treatment by means of lumbar puncture and serum administration is one of the most hopeful of prognostic indications. One should always perform lumbar puncture in doubtful cases rather than lose the opportunity for the early application of treatment.

*Stage of epidemic.*—During the early stage of an epidemic fulminating cases are more frequent than in the later stages, when the disease is usually milder and less liable to prove fatal.

*Age of patient.*—The mortality is distinctly heavier among infants and adults over forty. Infants under two years of age show the greatest mortality (80 per cent.); after two years the death-rate tends to decrease towards the fifteenth year. It then rises again showing a slight fall between 20 and 30. After 30 it rises considerably and increases with each subsequent decade.

*Previous health.*—The presence of chronic nephritis, chronic alcoholism, or latent tuberculosis impairs the patient's chance of recovery. Apart from such conditions, general health and constitution have little apparent influence; strong and robust individuals often die rapidly while those of poor physique recover.

*Mode of onset.*—A gradual onset is usually more favourable than one that is sudden and abrupt. The absence of vomiting at the onset of other than fulminating cases is of somewhat favourable import. Early loss of consciousness does not necessarily indicate that the outlook is bad.

*Type of case.*—The term "fulminating" or "malignant" is applied to those cases beginning abruptly and proving fatal within 24 to 48 hours of the onset. They are frequently met with early in an epidemic. It is in this type of the disease that the purpuric eruption, consisting of large plum-coloured spots, is most often seen, and has produced in the lay mind the dread associated with the name "spotted fever."

The prognosis in the posterior basic type of infants is also bad, the mortality being about 70 per cent. The type termed by A. M. Kennedy and myself "progressively purulent type," in which there is a gradual and progressive increase in the purulent consistency of the fluid obtained by lumbar puncture, is invariably fatal. In subacute cases the outlook is more hopeful than in acute ones (14 per cent. as compared with 55 per cent. in acute cases of all types).

*Temperature and pulse.*—The temperature and pulse-rate during the first day or two are guides merely to the severity of the disease and have no definite prognostic value. Continued hyperpyrexia during the course is of exceedingly grave import.

*Cerebro-spinal fluid at the first lumbar puncture.*—A purulent (yellowish) fluid obtained at the first lumbar puncture is of graver significance than a merely turbid (whitish) one, but by no means indicates that the patient will not recover. Excluding fulminating cases, among those showing merely a turbid fluid at the first lumbar puncture, recovery resulted in 77 per cent. of our own cases. From the presence of numerous meningococci on microscopical examination of the first samples of cerebro-spinal fluid obtained, no definite conclusions as regards prognosis can be drawn, but failure to find the diplococci after prolonged search is distinctly favourable.

*Type of coccus.*—In general, the isolation of a type II. (Gordon) coccus appears to offer the most favourable prognosis. During the war, the mortality of our type II. cases was 30 per cent. as compared with 40 per cent. for type III. Type I. coccus is somewhat resistant to treatment and usually gives rise to severe forms of the disease (60 per cent. mortality).

*Method of treatment.*—Most observers agree that the intrathecal administration of serum remains the method of choice and that the lumbar route is preferable to the cisternal. Cistern puncture entails more risk—especially of hæmorrhage—even in skilled hands, and there is no evidence that serum is any more efficacious when given by this route. Also, the subarachnoid space cannot be so adequately drained as by lumbar puncture. The administration of serum in the lumbar region entails practically no risk, and it has been shown (Carnegie Dickson: Brit. Med. Jour., 1917, i., 454) that solutions injected into the subarachnoid space by lumbar puncture penetrate readily into the chain of cerebral ventricles, reaching even to the tips of the lateral ventricles. Some authorities prefer to give serum intravenously, either with or without intrathecal injection, especially during the first few days of illness and in cases showing a petechial rash.

Serum administration may cease when organisms have disappeared from the cerebro-spinal fluid and the patient is improving, but drainage of the subarachnoid space by lumbar puncture should be continued daily until the cerebro-spinal fluid is practically clear.

### SPECIAL FEATURES

*Rash.*—If well-marked purpuric blotches (vibices) are present the case is nearly always fatal. A petechial rash appearing on the first or second day is sometimes said to be unfavourable. In my experience, however, fully 50 per cent. of these cases recover.

*Mental changes.*—Intense restlessness occurring early in the disease is of rather more serious import than delirium. Nevertheless, if delirium increases the prospect of a favourable termination becomes worse. Hallucinations occurring after the third or fourth day are unfavourable; they are often present in the progressively purulent type of case which invariably proves fatal. Cases in which mental symptoms are entirely absent nearly always recover.

*Head retraction.*—This symptom occurring in adolescents and adults is by no means so unfavourable a sign as has been supposed by some writers. In a series of military cases, 18 years of age and over,

who showed marked occipital retraction during the course, 60 per cent. recovered.

*Motor disturbances.*—Catching at imaginary objects and picking at the bedclothes (carphology and floccitation) are unfavourable signs. Also a convulsive seizure occurring in an adult must be regarded seriously; in infants convulsions have not the same significance. Nystagmus is sometimes associated with internal hydrocephalus, the prognosis of which is grave.

*Condition of sphincters.*—From the presence of retention or incontinence during the early stages of illness, no conclusion as regards prognosis can be drawn. These symptoms, however, occurring later in the course constitute an unfavourable development. When incontinence is suddenly replaced by retention the outlook is grave rather than otherwise.

*Abdominal reflexes.*—These reflexes are often diminished or absent early in the disease. Their return or increase is a sign that the patient is progressing favourably. Similarly, their disappearance is an unfavourable indication. Cases in which they are retained throughout usually recover.

*Herpes.*—The presence of facial herpes has been thought to furnish a sign indicating that the patient's chance of recovery is distinctly favourable. It is true that most cases showing herpes recover, but its occurrence is of no definite value. In our own series of cases in which facial herpes developed the mortality was 23 per cent.

*Blood pressure.*—The presence of a continued low blood pressure, especially below 100 mm. Hg, during the first two days of illness is of grave significance.

*Arthropathies* are considered by some authors to be of good prognosis as regards ultimate recovery from meningitis; in our experience the mortality in cases with this complication is nearly 50 per cent.

The development of *pneumonia* as a complication is a most serious but not necessarily a fatal occurrence.

*Pericarditis* nearly always heralds a fatal termination.

### CEREBRO-SPINAL FLUID DURING THE DISEASE

*Quantity.*—The daily evacuation of 40 to 70 c.cm. of cerebro-spinal fluid is more hopeful than when only small amounts are obtained; the latter may indicate impending internal hydrocephalus or increasing purulency. A "dry tap," provided one is quite certain that the subarachnoid space has been entered, is a most unfavourable sign. At least three different interspaces should be entered before a "dry tap" is regarded as conclusive. Cisternal puncture is then advisable.

*Density.*—Rapid or gradual decrease in the turbidity of the fluid is the rule as recovery proceeds and is an indication that the case is progressing favourably, providing fair quantities of fluid are obtained. Increase in the thickness and purulency of the fluid leading to difficulty of withdrawal through the lumbar puncture needle is one of the gravest of signs. It is seen in cases of the progressively purulent type and invariably leads to a fatal result.

*Glucose reaction.*—Persistent absence of glucose in the cerebro-spinal fluid is of distinctly bad prognosis. The return of glucose, having previously been absent, heralds definite clinical improvement; a recrudescence, however, may occur during which it again disappears. The glucose reaction invariably returns as the patient recovers.

*Bacteriological findings.*—On the whole, failure to obtain meningococci in culture from fluids subsequent to that withdrawn at the first lumbar puncture is a good prognostic sign. On direct microscopical examination of films of the cerebro-spinal fluid, the presence of intracellular organisms is generally a more favourable sign than when they are chiefly extracellular. If extracellular forms predominate the case is not doing well.

### COMPLICATIONS

*Internal hydrocephalus.*—The occurrence of hydrocephalic symptoms must be viewed with extreme gravity. Repeated lumbar puncture, however, may alleviate the generalised form. Even when internal hydrocephalus (closed meningococcal infection) is present the prognosis is not necessarily hopeless if appropriate measures of treatment are adopted.

*Hemiplegia* is not common, but may appear both in acute and subacute cases and often late in the disease. In some cases it is transitory, lasting only about 36 hours; in others it may be more permanent. In general the prognosis of hemiplegia occurring during the course is good, but when the paresis lasts for some time a residual palsy often remains. In rare instances an intercurrent cerebral hæmorrhage may occur, especially in patients with pre-existing nephritis or hyperpiesis; if not fatal it usually leads to some degree of permanent hemiplegia.

*Monoplegia.*—A flaccid paralysis localised to one limb or even a group of muscles is occasionally met with. Sometimes the condition is merely transitory and passes off within a day or two. In other cases however, the paralysis is more persistent and leads to the disappearance of the deep reflexes and muscular atrophy. These pareses appear to be due to involvement of anterior spinal nerve-roots, probably as a result of purulent infiltration of their pia-arachnoid sheaths. Unless the paralysis is extensive the prognosis is hopeful as regards ultimate recovery of movement.

*Paraplegia* is almost invariably of the flaccid variety, resembling that seen in acute myelitis. The prognosis is bad and the case usually proves fatal. Weakness of the legs and unsteadiness of gait with exaggerated deep reflexes is frequent during the early stage of convalescence. As a rule improvement is rapid.

*Peripheral neuritis* is rare, but may occur quite apart from the flaccid paralyses already mentioned. Recovery is the rule, although loss of the deep tendon reflexes may persist.

*Keratitis.*—In severe cases superficial corneal ulcers may develop in the absence of other ocular complications; they usually heal without perforation.

*Irido-choroiditis.*—This grave complication is fortunately rare. Loss of vision is the usual sequel, the eyeball becoming atrophied and the lens opaque. Occasionally an irido-choroiditis may lead to panophthalmitis; if this occurs and the patient recovers from the meningitis the affected eye usually remains permanently blind.

*Orbital cellulitis* is extremely rare. When it occurs it often terminates in thrombosis of the cavernous sinus with a fatal result.

*Amaurosis.*—This is a comparatively rare complication, and is most frequent in the posterior basic type of the disease affecting infants (about 30 per cent.). Occasionally blindness may appear somewhat suddenly and pass off after a certain period. In the other cases the blindness is permanent.

*Deafness of central origin.*—Deafness occurring at the outset or very early in the course of the disease may show a gradual disappearance as the patient's general condition improves. In most cases of temporary deafness improvement in hearing is noted only during convalescence. If recovery does not

occur then the patient is likely to be permanently deaf. In these cases it is always bilateral and usually appears early in the disease, rarely later than the first week of illness.

*Pyelitis.*—This complication is frequent in some epidemics while in others it is rare or absent. The pyelitis is of a benign type and never develops into true surgical kidney.

*Nephritis* is an infrequent complication. The possibility of pre-existing nephritis has to be borne in mind. In these cases the prognosis as regards life is unfavourable. In nephritis occurring as a direct complication of the cerebro-spinal fever the prognosis is good.

*Epididymitis* is occasionally observed during the early days of convalescence when a patient has recovered from the actual meningitis. The inflammation subsides in from ten to twenty days.

*Arthropathies.*—The joint lesion appears to be a synovitis rather than a true arthritis. Unlike gonorrhœal arthritis, involvement of the peri-articular tissues leading to adhesions and ankylosis is exceedingly rare. Not infrequently the joint condition is merely transitory, the effusion disappearing within a few days and leaving the joint apparently normal. At other times the arthropathy is more persistent, but eventually disappears if the patient recovers from the meningitis.

C. WORSTER-DROUGHT, M.D., F.R.C.P.,
Physician to the West End Hospital for Nervous Diseases and to the Metropolitan Hospital; Consulting Neurologist to the Bethlem Royal Hospital.

# SPECIAL ARTICLES

## BRITISH MEDICAL ASSOCIATION

### MEETING IN MELBOURNE

### SECTION OF PATHOLOGY AND BACTERIOLOGY

AT a meeting of this section, presided over by Prof. A. MURRAY DRENNAN (Edinburgh), a discussion on

**The Problem of Calcification**

was opened by Dr. F. HANSMAN (Sydney). After describing briefly the process of calcification and ossification in the normal development of bone, he spoke of the chemistry of osteoid tissue and the state in which the calcium salts are laid down in this tissue. It appeared, he said, that calcium carbonate and phosphate are deposited together in crystalline form, but apparently not always in the same proportions. In blood plasma calcium probably existed principally in the form of calcium proteinate, which ionised as a weak electrolyte into calcium ions and protein ions. The precipitation of calcium from serum or lymph to form bone salts in the matrix of cartilage and osteoid was controlled by what might be termed an "enzyme complex," consisting of the enzyme phosphatase, some second calcifying factor as yet ill-defined, and vitamin D. It was necessary to postulate the existence, in hypertrophic cartilage and osteoid, of this second calcifying factor, because phosphatase was known to be present in many other situations in which however calcification did not occur. Recent work suggested that it was the second calcifying factor which was influenced by vitamin D. Dr. Hansman then went on to discuss the interdependence of ingested calcium, phosphorus, and vitamin D for calcification. Dietetic experiments with various animals showed that improper Ca : P ratio, as well as vitamin-D deficiency, may occasion a variety of bone diseases which have their counterparts in human pathology, though the exciting causes may not always be the same in man and animals. In discussing the amounts of calcium and phosphorus required for normal calcification in growing children, Dr. Hansman cited Sherman's estimate that at least one gramme of calcium a day is necessary, an estimate which, however, he regarded as too high. From his own survey of the diets of 200 normal children of the working and middle classes in Sydney, it appeared that 0·5 g. or less of calcium per diem was adequate. The requirements of phosphorus in the diet could not be similarly considered, because much of the phosphorus was needed for metabolic processes other than calcification; but there was evidence that the problem of phosphorus requirements was more important than that of calcium requirements.

Prof. P. MACCALLUM (Melbourne) said that calcification occurred in two main situations: (1) in the hyaline matrix of cartilage or bone, and (2) in areas of necrotic tissue. Before we could understand completely the process of deposition of bone salts, we would need to know more of the properties of the mucoproteins present in cartilage and ossein. Hydrogen-ion concentration must be important. With regard to the state of vitality of the hypertrophic cartilage cells before calcification, the presence of a healthy looking Golgi apparatus in these cells suggested that they were not senescent but were healthy viable cells. Calcification in dead tissue was of much interest. How did the calcium reach the dead material? There was probably a definite topographical relationship to the circulation—witness the frequent presence of multiple discrete foci of calcification in the dead material, and also the frequently peripheral distribution of calcification in such lesions.

Dr. E. S. J. KING (Melbourne) referred to the experiments of Huggins which he had repeated. If bladder epithelium was transplanted into the abdominal wall of dogs, calcification and ossification took place in the tissues external to the regenerating part of the epithelial cyst which developed, and the fluid contents of the cyst contained phosphatase.

Dr. R. A. WILLIS (Melbourne) said that the experiments of Huggins had in part been anticipated by several German workers of last century, who had found that, after ligation of the renal pedicle in rabbits and other animals, plates of bone developed around the pelvis of the damaged kidney. Dr. Willis had repeated this experiment in rats and had obtained a like result.

Dr. R. D. WRIGHT (Melbourne) said that examination of sections of non-decalcified bones made it evident that the bone salts were deposited in very finely crystalline form. In a sequestrum the particles of calcium salts were much coarser, and there was also conspicuous loss of protein. The crystals of bone salts also exhibited a characteristic orientation, and it might well be that the increased skiagraphic density of sequestra was due, not to raised calcium content, but to loss of the proper orientation of crystals so that greater reflecting surfaces were presented to X rays.

Dr. J. V. DUHIG (Brisbane) had been specially

interested in calcified arteries, in which the Ca : P ratio and also the phosphate : carbonate ratio were almost constant and corresponded closely with the ratios in normal bone. His observations on the calcification of costal cartilages, which was very capricious, suggested to him that it depended essentially on the presence of vascular lesions, and he thought that calcification in general might well be studied from this point of view.

Dr. HANSMAN, in reply, said that like Prof. MacCallum he believed that the hypertrophic cells of calcifying cartilage were not moribund but healthy and functional. With respect to Dr. Duhig's remarks on arterial degeneration, there were many other factors—e.g., the metabolism of lipoid—which made this problem a complex one difficult of analysis.

### Pathology of Osseous Tissue

The PRESIDENT (Prof. Drennan), in opening the second discussion, said that bone differed from soft tissues only in that it was a hard tissue with a high mineral content. Its hardness was the main factor in modifying pathological changes in the tissue—for example, the slow removal of sequestra in inflammatory diseases of bone was a consequence of its hardness. Prof. Drennan then went on to consider some of the dystrophic diseases of bones. He outlined the principal structural changes in osteitis fibrosa due to parathyroid over-activity, and emphasised that no special histological type of parathyroid overgrowth could be incriminated. The structural changes in osteitis deformans were very similar to those in osteitis fibrosa, but with bone deposition predominating over bone resorption; and there was no definite evidence that osteitis deformans was an endocrine disturbance. Regarding the reactions of bone to invading tumours, dural meningioma provided an interesting instance, exemplified by a remarkable case which he described. The so-called "benign" giant-cell tumour of bone had better shed its benevolent title, for it might yield metastases. In a recently observed case of tumour of the humerus, biopsy sections had the structure of the so-called "benign" giant-celled growth; but, after amputation, more thorough sectioning of the growth revealed also areas of osteogenic type, and the patient subsequently died with large pulmonary metastases. Prof. Drennan concluded his address with an account of two cases of plasmocytoma of the spine.

Prof. MACCALLUM spoke of the views of Leriche and Policard on osteogenesis, and maintained that the evidence in their favour was unsatisfactory. He also said that the mechanical efficiency of bone might depend not only on its calcium content but on the quality of the matrix.

Dr. K. INGLIS (Sydney) mentioned a case like that described by the president, in which an osteogenic sarcoma showed areas resembling giant-cell tumour. He asked whether Prof. Drennan thought that osteoclasts were essential to bone resorption. He also mentioned the occurrence of heterotopic bone in the liver of a dog exposed to X rays.

Dr. KING described the metaplastic changes in the joint tissues and bones of Charcot's joints; and also the development of metaplastic bone in the walls of arteries. From a study of bone sarcomas he believed that many of these contained hæmopoietic tissue as an integral part of the growths.

Dr. WILLIS said that bony metaplasia in connective tissues showed that even in the adult body the tissues had not completely lost that plasticity which was characteristic of the early embryo. Since connective tissue could become bone, and vice versa, it was probable that reversible osteoblast-fibroblast transformations were of great importance in bone pathology.

Dr. DUHIG mentioned a case of sarcoma supervening on osteitis deformans, and asked how common this change was.

Dr. WRIGHT said that Leriche and Policard's views did not accord well with his observation that in limbs which were the seat of arteriovenous aneurysms, no abnormalities were found in the bones in spite of the altered circulatory state.

The PRESIDENT, in reply, agreed with Dr. Willis that osteoblasts and fibroblasts need not be looked upon as rigidly specific types of cells. In answer to the question of Dr. Inglis, he said that bone resorption was possible without osteoclasts, and the factors determining the numbers of these cells were obscure. To Dr. Duhig he said he did not know how often sarcoma supervened on osteitis deformans, but this finding was certainly uncommon.

### Leukæmic Infiltrations and Teratomata

*Leukæmic infiltrations* was the subject of a brief paper by Prof. J. B. CLELAND (Adelaide), who described several cases in which post-mortem study revealed unsuspected leukæmic infiltrations of heart, kidneys, pancreas, and other organs. He emphasised the difficulty of differentiating sharply between leukæmias and lymphosarcomatosis which might yield identical histological appearances in various viscera, as might also acute Hodgkin's disease.

*Neural Components in Teratomata.*—Dr. WILLIS illustrated this subject by a series of lantern slides. Teratomas when adequately examined were found to contain neural tissues very frequently—in 18 of 22 specimens studied by the speaker. These tissues took all possible forms, including immature neuro-epithelial tubules, differentiating spongioblastic tissue, fully differentiated neuroglial areas with astrocytes which stained typically with Cajal's gold sublimate, nerve-cells in central nervous tissue, ependymal cavities, choroid plexus, peripheral ganglia, nerve bundles, and pacinian corpuscles.

## SECTION OF SURGERY

ADVANCES in our knowledge of hydatid disease during the twentieth century was the subject of a discussion at this section opened by Prof. HAROLD R. DEW (Sydney).

### Hydatid Disease

In Australia, he said, the disease first came into prominence in the 'sixties, and reached its peak incidence in the 'nineties. The clinicians of this time, meeting with the condition in all its manifestations, used their opportunities to the full and made many original observations on the clinical side. During the next thirty years, indeed, nearly all the problems of immediate practical importance were solved. To-day the disease had much diminished in frequency; it was well recognised that the commonest source of human infestation was direct contact with infected dogs, and that factors like infected water-supplies and raw vegetables were of little importance. Such infestation was readily preventable and easy to control, and its incidence should be further decreased by public health propaganda. The hydatid registry of the Royal Australasian College of Surgeons was inquiring into the incidence and distribution, but further individual research was also needed.

Prof. Dew thought that the general pathological

advances in Australia had kept abreast of those in other countries. Hydatid pathology had been revolutionised since the publications by Deve, and later by Australian and South American workers, of experiments proving that germinal elements in the form of relatively differentiated scolices derived from a fertile primary cyst could, if shed into tissues, serous cavities, or the blood stream, undergo a complete metamorphosis and become in their turn fertile secondary cysts. Clinical observation had confirmed these experiments, and the difference between primary and secondary cysts, the nature of recurrent cysts, multiple cysts, and metastatic cysts, was now appreciated. As a rule infestation occurred in childhood and the average cyst was almost as old as its host. The histogenesis of the parasite, its structure, mode of growth, and diverse pathological appearances in both man and animals were now more completely understood.

A case of alveolar hydatid, the first to be reported in Australia, which he had described in 1931, had, he said, negatived the geographical argument of the dualist school, which believed that alveolar hydatid was due to a specific parasite distinct from the common form. Another important advance was the recognition of the anaphylactic nature of many symptoms of hydatid disease. It was now appreciated that symptoms were due to pressure, leakage, or infection, and he believed that the pathology and symptomatology of hepatic hydatid, its intrabiliary rupture, intraperitoneal rupture, and intrathoracic extension, were fully understood. Information was still required, however, regarding growth, distribution, and complications. Radiography had been an invaluable aid in diagnosis, and it was to the radiologist that the speaker would look for further knowledge.

The importance of the immunological tests was well known, and Prof. Dew hoped that further experimental work would throw light on their relative value and fallacies. As regards treatment, Australian surgeons had played their part in the development of radical surgical methods. Although as much was now known about hydatid as about any other disease, all possible use should be made of opportunities for further investigation—opportunities which Australia in particular could offer.

Mr. B. KILVINGTON (Melbourne) confined his remarks to calcification in hydatid cysts. At the Melbourne Hospital in the last ten years 86 per cent. of the calcified cysts found were in the liver, and he believed that this was due to the thickness of the adventitious layer in this situation. He pointed out that 46 per cent. were discovered in routine examination and presented no symptoms. The death-rate was between 5 and 10 per cent. and was always due to infection. In treatment, he accentuated the advantages of crushing the cyst, swabbing with strong formalin, and drainage. In his two cases thus treated the calcified material had soon been extruded, with subsequent closure of the sinus.

Dr. D. CARMALT-JONES (New Zealand) described the life cycle of *Tænia echinococcus*. A hydatid registry, he said, had been established in New Zealand under the leadership of Sir Louis Barnett. When the registry possessed 1000 cases of hydatid disease they intended to hand over their data to the hydatid registry of the Royal Australasian College of Surgeons.

Mr. H. R. G. POATE (Sydney) discussed intrabiliary rupture of liver hydatids. He described how the common bile-duct became blocked by membrane or small cysts following erosion of the larger bile-ducts. In dealing with the diagnosis, he pointed out that confusion often existed between this disease and gall-stone attacks. Common bile-duct drainage, he said, was advantageous for deep liver cysts communicating with the ducts.

Dr. S. C. FITZPATRICK (Hamilton, Victoria) spoke of the incidence of hydatid disease in various parts of Victoria, excluding the metropolitan area, pointing out that the disease was most prevalent where the number of sheep was greatest. In referring to liver cysts he emphasised the advantages of the sub-pleural route of approach.

Dr. K. FAIRLEY (Melbourne) confined his remarks to the immunological reactions. The precipitin test, he said, was comparable to the complement-fixation test, and had been discarded in favour of the latter, which was quantitative. This test was of value especially with complicated cysts and was the only one useful in the diagnosis of recurrent cysts. The Casoni test was helpful only in the pre-operative diagnosis of the primary cyst.

Dr. K. S. CROSS (Melbourne) showed X ray photographs of hydatid cysts. He said that localisation was more accurately determined by two views taken at right angles than by stereoscopic views.

Mr. H. B. DEVINE (Melbourne) supported by Mr. B. QUICK (Melbourne) uttered a warning against the use of formalin, and Mr. MURRAY MORTON said that the disasters which followed formalin treatment were due to the fact that Deve's technique was not carried out accurately. If this were done, in his opinion, no ill-effects would be experienced.

Sir THOMAS DUNHILL (London) paid a tribute to Deve and Dew for their work. He pointed out that the morbidity, apart from the mortality, was very great.

Prof. DEW, in reply, agreed with Mr. Kilvington in leaving calcareous cysts alone as long as possible, and with Mr. Poate in attacking the common bile-duct in most cases of liver cyst with intraduct rupture. He emphasised the importance of adhering to Deve in the use of formalin.

### Surgery of the Pancreas

Mr. HAROLD UPCOTT (Hull), opening a discussion on surgery of the pancreas, said it was generally agreed that acute pancreatitis was caused by infection, the biliary tract being the usual source. He pointed out that three anatomical types were recognised, hæmorrhagic, gangrenous, and suppurative. To these he added a fourth, the pancreatic œdema of Archibald and Elman. Enumerating the symptoms and signs, he laid stress on the difference between pancreatic œdema and acute pancreatitis, and also referred to the confirmatory tests used as an aid to diagnosis. The treatment was operative, external drainage of the biliary system being essential. If effusion was great the gland itself could be drained, but the drainage should not be discontinued too soon for fear of a pseudo-cyst forming. Going on to speak of chronic pancreatitis, Mr. Upcott said he believed that constant boring epigastric pain was common to most pancreatic infections and was due to the proximity of the cœliac plexus. Of the functional tests employed as an aid to diagnosis, the estimation of blood diastase was the most reliable; the diastase was increased if the ducts were obstructed, and diminished if the acini were atrophied. Treatment consisted in the establishment of biliary drainage. Pancreatic cysts Mr. Upcott divided into four types: (1) retention cysts, (2) neoplastic cysts, benign or malignant, (3) pseudo-cysts, (4) parasitic cysts. In mentioning post-operative pancreatic fistulæ he suggested their dissection and implantation into the

stomach. In cases of carcinoma of the pancreas blood transfusion was useful. Surgery endeavoured to relieve the jaundice and duodenal obstruction and to remove the growth. In certain cases of hypoglycæmia attributed to excessive insulin production, local overgrowth, adenoma, or adenocarcinoma of the pancreas had been found; and if other causes of hypoglycæmia could be dismissed, pancreatic exploration was justifiable. Where no tumour was found subtotal pancreatectomy was a possibility; Mr. Upcott mentioned Graham's case, and concluded with a plea for further experimental work in this direction.

Mr. F. C. PYBUS (Newcastle-upon-Tyne) confined his remarks to acute pancreatitis, emphasising the almost constant association of pancreatitis with biliary infection. The four types of acute pancreatitis mentioned by Mr. Upcott were, he thought, rather stages in progress of the one disease than separate types. He favoured conservative treatment and subsequent drainage of any abscess formed, provided the pre-operative diagnosis was absolutely certain.

Mr. BALCOMBE QUICK (Melbourne) compared the figures of the Alfred Hospital, Melbourne, and the Johns Hopkins Hospital, Baltimore, and showed that acute pancreatitis was ten times commoner in Melbourne. He assumed that this was because the disease was more often recognised in Melbourne. He referred to the great value of the urinary diastase test for confirmation of diagnosis, and agreed with Mr. Pybus in advising delayed treatment if the diagnosis were certain.

## SECTION OF MEDICINE

ON Sept. 11th, Lord HORDER being in the chair, Prof. C. G. LAMBIE (Sydney) opened a discussion on

### Obesity: Ætiology and Metabolism

Obesity, or excess of depôt fat, was, he said, important clinically as a disfigurement, a disease, or a sign. It might produce distress, impair the sense of well-being, and even be a menace to life itself. That it shortened life was shown by insurance records. The simplest of the many formulæ given for calculating the ideal weight, although not taking into account the build of the patient, was that of Broca, where

Weight in kilos = Height in centimetres less 100.

The normal variations ranged between 15–20 per cent. above or below the calculated weight. An expression of the grade of obesity was given by dividing the actual body-weight by the ideal body-weight. The energy balance, a disturbance of which might give rise to obesity, was shown diagrammatically as follows for a male 70 kg. in weight, 170 cm. in height, aged 24 years, and performing light work:

| | Calories. |
|---|---|
| Basal metabolism .. .. .. | 1706 |
| Activity .. .. .. .. | 534 |
| Specific dynamic action .. .. | 285 |
| Total food equivalent .. | 2525 |

The energy required for activity was much smaller than that for basal metabolism. Most persons overate and the possible ways of dealing with excess food were as follows:—

1. Limitation of absorption. } (Not proved
2. Elimination. } experimentally.)
3. Increased mechanical work.
4. Combustion (luxus consumption).
5. Storage.

He explained the anomaly of persons who ate excessively and yet remained constant in weight by luxus consumption, which had been proved in case of herbivora, although not in man. The amount of energy that could be disposed of by luxus consumption was approximately 60–65 per cent. of that required for basal metabolism, although it varied greatly in different individuals, and if it were low obesity was likely to develop from over-feeding. High sugar tolerance, if due to hyperinsulinism, would lead to obesity. Similarly low sugar tolerance caused by pituitary basophilism, abnormality of the adrenals or thymus, would also cause the excess syndrome. Lesions of the diencephalon gave increased liver glycogen and obesity.

In concluding, Prof. Lambie classified obesity as:—

| | |
|---|---|
| A. Developmental | ? Hereditary. |
| B. Metabolic: | Hereditary or acquired. |
| Endocrine. | |
| Nervous (hypothalamic). | |
| Neuro-endocrine. | |
| C. Nutritional. | Acquired. |

Sir JAMES PURVES-STEWART (London) discussed the endocrine aspect of obesity and stressed the importance of the thyroid and pituitary glands. Pineal obesity was probably due to mechanical pressure on the pituitary gland. Pancreatic obesity due to hyperinsulinism was not frequent. Genital obesity occurred after castration or the menopause, and increase in weight during the menstrual period was noted in some fat persons. Adrenal obesity was found chiefly in women associated with subinvolution of the uterus and ovaries. Subthyroid obesity was especially marked after pregnancy; it was most obvious in the regions of the buttocks, thighs, abdominal wall, and breasts. Pituitary obesity was the most important type; it was caused by a deficiency of the basophil cells in the anterior lobe. There were grave doubts however whether the lack of hormone alone was sufficient, and it was probably a combined effect of lack of hormone and pressure on the hypothalamus. Cushing's basophil pituitary syndrome due to a mixed type of pituitary adenoma was a polygland syndrome, as it was the same as that observed in tumours of the adrenals and thymus. Obesity due to pituitary abnormalities, except tumours, were often curable, as shown by photographs of a boy who presented the typical syndrome of Fröhlich at 13 years of age, but was quite normal six years later. He had been treated with thyroid and pituitary extract.

Dr. J. H. ANDERSON (Ruthin Castle) dealt with the treatment. He stressed the importance of taking a full history and of making a complete examination so that cases could be classified according to the causative factors—endogenous, exogenous, or mixed. Where possible estimations of the basal metabolic rate, sugar tolerance, and X ray examination of the pituitary fossa should be performed. In treatment there were four lines of attack: two major, diet and exercise, and two minor, drugs and physical treatment. In most cases of obesity, diet and exercise were of paramount importance. A good reduction diet was low in carbohydrate, well supplied with protein, and strictly rationed in fat, but sufficient to carry the necessary fat-soluble vitamins. He showed the diet tables used at Ruthin Castle and stressed that the food should be varied and its bulk made up with fruit and vegetables according to the patient's inclinations. Each case must be judged on its merits, and too rapid a reduction should not be aimed at. A loss of 3 lb. per week was the average, but he

had seen as much as 12 st. lost in 8½ months. The food should be weighed in some cases and the patient should be weighed weekly and regulate the diet accordingly. Exercise should be regular and the amount should depend on the condition of the patient. Blood pressure and pulse estimations before and after exercise were useful guides in estimating this. Drugs should find their greatest use in endogenous obesity, but except in some cases due to hypothyroidism, diet and exercise were also necessary. True hypothyroid cases should not be put on reduction diets, as they stood it badly. Great care should be exercised with thyroid medication. A rise of pulse-rate of 10–15 per minute suggested overdosage. He cited two cases who had been slimming by thyroid that had led to fibrillation and œdema. Many cases of exogenous obesity were helped by gr. ¼–½ of thyroid twice daily. Physical measures in the form of massage, electric light baths, and the Bergonié chair had little effect on the weight.

Dr. E. H. STOKES (Sydney) discussed the relationship between obesity and hypertension. He had investigated the relationship between the two conditions in his last 1000 cases in private practice. Of these 81 (43 females and 38 males) were 20 per cent. or more over-weight according to standard tables. Of the 81 patients, 18 (15 females and 3 males), i.e., 22 per cent., had systolic blood pressures of 160 mm. of mercury or more. In contrast, 6 per cent. of the non-obese group of 919 had blood pressures of the same order. Although the two groups were not strictly comparable, it appeared that hypertension occurred much more frequently in the over-weight group. Approximately half of the 18 hypertensive over-weight patients were females between the ages of 45–55. Only four cases showed evidence of endocrine disturbance. They included one acromegalic, one hypothyroid, and two diabetics. In his experience loss of weight was often followed in the obese by fall in blood pressure, and he therefore thought it not unreasonable to consider the converse could take place. He suggested that pituitary disturbance could cause both the hypertension and the obesity and concluded by saying that on present knowledge it could not be assumed that obesity was actually the cause of the hypertension present in some cases.

Prof. LAMBIE, in reply, disagreed with Sir James Purves-Stewart regarding the distribution of fat in certain endocrine cases; in his experience the distribution was very variable even in the same type of case and sometimes similar in cases of different ætiology. In determining the ætiology he paid more attention to the skin and the state of development of the genitals. Deficiency of the gonadotropic hormone probably had an indirect action. In reply to Dr. Stokes he thought that the hypertensive cases should have been correlated with sugar-tolerance estimations.

## Diabetic Gangrene

Dr. A. CLARKE BEGG (Swansea) said the incidence of gangrene had increased because the longer life of the diabetic had increased the incidence of arterio-sclerosis. The diagnosis was easy, but any lesion of the diabetic foot should be regarded as potential gangrene. The predisposed patient should be kept slightly below normal body-weight and the urine sugar-free. Even the slightest injuries should be avoided and the feet kept warm, dry, and clean. If dry gangrene developed it should be treated conservatively; if moist, amputation should be undertaken without delay. The procedure for mixed types should be judged on the amount of sepsis and pain, rate of spread and constitutional disturbance. In all cases thorough treatment of the diabetic state was essential.

Dr. J. C. MATTHEWS (Liverpool) said that before amputation the circulation in the limb should be estimated at different levels by a sphygmomanometer and that a line of demarcation should not be awaited too long. Gangrene of the flaps of operation wounds in diabetics should be prevented by thorough insulin treatment.

Dr. M. D. SILBERBERG (Melbourne) stressed the importance of keeping the affected part warm and dry. By means of eusol irrigations high amputation could be avoided in some cases of moist gangrene.

Dr. KIMPSON MADDOX (Sydney) said that Pickling and Hess's method of testing circulation was simple and accurate. Coronary thrombosis was common in such cases. After operation, kidney failure was not unlikely; gas-and-oxygen was the anæsthetic of choice.

Dr. E. COOPER (Melbourne) said that powerful antiseptics, such as iodine, had caused gangrene and that bedsores must be avoided at all costs. Arterio-sclerotic fundal changes were common. Not all cases of gangrene associated with glycosuria and acetonuria were due to diabetes.

## Hæmolytic Jaundice

Dr. S. O. COWEN (Melbourne) read a paper on the pathogenesis and treatment of hæmolytic jaundice. The pathogenesis, he said, was obscure, but Hayden had shown that the fundamental fault was in the erythrocytes. The familial type was common. He had seen 30 cases in the last 15 years; 17 had been in the one family. Twenty cases had been subjected to splenectomy without any deaths. The most severe cases improved rapidly and survived for many years. It was advisable to remove the spleen as soon as the diagnosis was made, because severe hæmolytic crises might cause death rapidly. The severity of the disease could best be judged by a careful history, especially the family history. Thirty-five per cent. of his cases were associated with pigment stones in the gall-bladder. If possible, when performing the splenectomy, the stones should be crushed digitally without opening the gall-bladder.

Dr. C. T. C. DE CRESPIGNY (Adelaide) asked if splenectomy prevented ulceration of the legs, which was not uncommon in these cases; and what was the treatment of the blood crises?

Dr. EVA SHIPTON (Sydney) related a case of acholuric jaundice in an elderly woman.

Dr. G. COOKE (Colombo) said that splenectomy for large spleens due to malaria was very fatal owing to pleural effusions and pneumonia.

Dr. COWEN, in reply, said that splenectomy cured leg ulcerations. Crises were treated by blood transfusions, but these might be dangerous, as fatal reactions had sometimes followed their administration.

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SUNDERLAND CORPORATION MENTAL HOSPITAL.—Plans for the extension of this hospital at an estimated cost of £170,000 have been approved by the visiting committee and will be sent to the Board of Control. The extensions include a new admission block, a nurses' home, and a general hospital block, and will accommodate another 240 beds. The hospital is at present much overcrowded and, it is stated, that there are 60 beds in the hospital chapel.

# INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE

SOME forty-five nations took part in the 10th International Congress of the History of Medicine which opened in Madrid on Sept. 22nd, 1935, under the presidency of Prof. Gregorio Marañon. There were three main subjects for discussion and the greater number of papers were read in Spanish.

## Arab Medicine in Spain

Dr. FIDEL FERNANDEZ (Spain) and Dr. ZAKI ALI (Geneva) described the way in which the influx of Arabian culture following the Mohammedan invasion of Spain at the beginning of the eighth century influenced medical science in Europe generally and in Spain in particular. Although dissections and autopsies were strictly forbidden, Arabian translations of Galen's "Anatomy" and a study of skeletons wherever these could be unearthed enabled the Arab physicians to devise and undertake complicated surgical operations. Thus towards the end of the tenth century a complete treatise was written on the formation of the fœtus, the treatment of pregnancy, the causes of dystocia, abnormal presentations, and the technique of version. Amongst the most famous names of the Hispano-Moresque renaissance of medicine were those of Abulcasis (936–1013) and Avenzoar (1094–1162). Abulcasis was perhaps the greatest surgeon of the Arab race, and his great medico-chirurgical encyclopædia "Al Tasrifa" remained for long the leading text-book in all the universities. Among other things he described the technique of actual cauterisation for the control of hæmorrhage, and for fistula, liver abscess, and other conditions; tracheotomy, lithotomy, and amputations; the treatment of wounds; the problem of suppuration; fractures and dislocations; the treatment of dental and oral deformities; the treatment of hydrocele. Avenzoar, one of a long line of famous physicians, was the first to describe cancer of the stomach, pericarditis, abscess of the pericardium, peritoneal and mediastinal abscess (from which he himself suffered), pharyngeal paralysis, otitis media, and the nervous complications of Pott's disease.

Dr. ASHER BLOOM (Cairo) showed that the osteology of Abulcasis was really derived from a part of the Talmud, known as "Michna," an ancient Hebrew compilation of the second century, in which a detailed description is given of the 248 bones of the human body. In any case it is certain that "by the tenth century the Moslems had brought to Spain a vast accumulation of Greek philosophical and scientific works, with Oriental elements added." In the twelfth century the Hispano-Jewish physician Maimonides was an outstanding figure. Personal physician to the Court of the Sultan Saladin, he was a fervent advocate of preventive measures—personal hygiene and diet—rather than drugs in the maintenance of health. The function of medical knowledge was, in his own words, "to teach humanity the causes of ill-health, the correct dietetic hygiene . . . how to prolong life, and how to avoid disease."

Dr. PIETRO CAPPARONI (Italy) described the work of Ibn-al-Baitar (thirteenth century), whose famous botanical treatise "Simplicia" constituted a remarkably complete materia medica of his day and led to great progress in therapeutics and pharmacology.

## Medicine During the Colonisation of America

Prof. AUGUSTO DA SILVA CARVALHÓ (Lisbon) confined himself to a review of Portuguese America, Brazil, from the time of its discovery by Pedro Cabral in 1500. The diseases encountered by the colonists included heat-stroke; virulent malaria of various types which frequently killed its victims in two or three days; goitre; parasitic infections; tetanus; typhoid, paratyphoid, and typhus; grippal influenza which decimated the country towards the end of the sixteenth century; pneumonia; scurvy; beri-beri; dysentery; syphilis; yaws; tropical anæmia; tuberculosis; small-pox; scarlet fever; yellow fever. Medical assistance was extremely scanty and precarious for a long time over the whole of South America, and for many years was almost exclusively represented by empiricists and charlatans who flocked to the country and often made large fortunes there. Many of the American Indians, however, were skilled in the lore of herbal remedies, applying various roots, barks, flowers, leaves, seeds, and fruits for the successful treatment of disease. Our knowledge of many vegetable drugs, later included in our own materia medica, is due to these early pioneers. Moreover, in the sixteenth century missionaries, especially among the Jesuits and members of the secular clergy, possessed some knowledge of medicine acquired in convents and hospitals and by the reading of books in the monastic libraries, this knowledge giving them an enormous prestige in their work of colonising and proselytising.

Dr. EMILY EMMART (Johns Hopkins) gave a description of the Badianus manuscript, a sixteenth century Mexican herbal, written in Aztec and Latin, this book representing not only Aztec medical treatments which existed at the time of the Conquest, but also the earliest academic instruction in medicine in America.—Dr. M. A. VAN ANDEL (Holland) gave an account of William Piso, physician to the Dutch West Indian Company in Brazil between 1636 and 1644. Piso was the author of a learned encyclopædia of the natural history of Brazil, with chapters on its diseases, their origin and treatment; but his outstanding contribution to medical science is his description of dysentery and its cure by the ipecacuanha root, a specific whose virtues he learnt from the Indians who employed it as an emetic in cases of poisoning and as an astringent in chronic diarrhœa. Dr. van Andel showed that the merit of introducing emetine into the materia medica should be attributed to Piso rather then to Garnier and Helvetius.

## Medical Folk-lore

Prof. LAIGNEL-LAVASTINE (Paris), in a general introduction, said that medical folk-lore had a double interest, theoretical and practical. Modern therapeutic investigations had often confirmed the value of substances employed in popular medicine. Medical folk-lore could be classified in three groups: ethnological mutilations; magical and religious practices; and popular medicine. A study of this kind involved both psychological and social factors, of which the former were genetic and included essentially instinct, analogy, and animism with its derivatives.

Dr. J. D. COMRIE (Edinburgh), discussing the medical folk-lore of Scotland, said that one of the chief methods of healing in pre-Christian days was by bathing in or drinking from wells in which a spirit was believed to reside. Christian missionaries coming to Scotland in the seventh century and finding this form of healing firmly fixed among the people, blessed the wells, giving them the names of various saints, and some of these wells are still used for healing purposes. Balls of rock crystal and other stones with a reputation for healing properties are preserved in various Scottish families. Lists

of remedies used among the Scottish peasantry were published in the seventeenth and eighteenth centuries, some of these remedies, made from plants, appearing to be natural and salutary, but many were extremely disgusting.

Prof. VICTOR GOMOIU (Rumania) included under the name "medical folk-lore" the whole of popular sanitary science—a science which was reflected in popular beliefs, habits, superstitions, prayers, incantations, witchcraft, charms, and various medical and surgical practices. He insisted that if more attention had in the past been paid to medical folk-lore, medicine would have avoided many useless deviations in its evolution, and scientific medicine would have reached a more advanced point than it has done to-day. Popular science in the Balkan countries has given to scientific medicine many priceless therapeutic elements: baths, variolisation (ancestor of vaccinotherapy and even of vaccination itself), cupping, and a vast number of vegetable and other remedies (opium, squill, petroleum, &c.) to which "medical science" has done no more than verify their action by experiment and perfect their mode of use.

Dr. P. STOIANOFF (Bulgaria) described the popular beliefs of his country in regard to various diseases, their cause and treatment, with the forms under which the medicinal plants are administered in each case.

Prof. SÜHEYL ÜNVER gave a similar account of popular beliefs in Turkey, and other speakers for Switzerland, Scandinavia, and Italy.

This section was followed by papers on the history of medicine and medical sociology contributed by Dr. HENRY SIGERIST (Johns Hopkins University) and others. An exhibit of the Wellcome Historical Medical Museum included illustrations of Arabian surgical instruments from the early fourteenth century; MSS. of Abulcasis; examples and replicas of other early medical MSS.; objects of historical ophthalmology, with a section devoted to the evolution of spectacles. Several dioramas were shown, including a view of the Hospital of Santa Cruz at Toledo, as it appeared in the sixteenth century.

Visits were arranged to a large number of institutions of scientific, historic, artistic, or archæological interest, including a day at Toledo.

## AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

### THE VISITORS TO MELBOURNE

THE 103rd annual meeting of the British Medical Association, the first meeting of its kind in the Southern Hemisphere, has been attended not only by many world-famous medical men and women from Great Britain, but by distinguished representatives of medicine from Holland, China, Japan, India, Ceylon, and most parts of the British Empire. The contacts brought about by such a gathering will be of value to all, whilst the election of an Australian doctor to the presidency is much appreciated here.

Most of the visitors from Great Britain travelled across America; one party crossed Canada, the other the United States, the latter spending two days in New York and one in Washington, with shorter halts at Chicago, Alberquerque (New Mexico), and Los Angeles. A special air-conditioned train was made available for the party on this transcontinental journey. The *Aorangi*, with the northern party on board, was diverted to San Francisco to pick up the southern party, and enjoyable days were spent at Honolulu and Suva. At Suva, a special display of fire-walking was given and great interest was taken in the medical school for training native doctors. The party, which numbered 250, arrived at Auckland in New Zealand on Sept. 2nd. Many took the opportunity to visit Rotorua, where they received enthusiastic civic and Maori welcomes. The *Aorangi* reached Sydney on Sept. 6th, when a civic welcome was given and the party were entertained at luncheon by the New South Wales branch of the B.M.A., and left next day for Melbourne. Large numbers of members were brought also from New Zealand by the *Wanganella*, and many arrived via Suez. The attendance at the congress of members and their families is estimated at between 3000 and 4000.

It may be mentioned here that at the annual dinner Mr. H. S. Souttar, chairman of the representative body, suggested as a permanent memorial of the visit the inauguration of a federal medical research endowment fund in Australia. It was announced later in the week that the Federal Government, acting on this suggestion, are taking steps to form an Australian Medical Research Council.

There can be no doubt about the success of the congress, which reflects the greatest credit, not only upon the central organisation in London, but particularly on the members of the Victorian branch of the Association, who have been untiring in their efforts.

## PARIS

(FROM OUR OWN CORRESPONDENT)

### A NATIONAL CENSUS OF DOCTORS AND DENTISTS

A FEW months ago the Commission de l'Hygiène de la Chambre des Deputés, of which Dr. Nast is a member, issued a report on the need for a national census of the doctors and dentists legally qualified to practise in France, and this recommendation has now been incorporated in what is commonly known as the Nast law of July 26th, 1935. Every properly qualified doctor and dentist practising in France will have to show his or her diplomas before Jan. 27th, 1936, and for the bona-fide practitioners who have lost their papers this law will be a source of some temporary inconvenience. But the people who will and who are meant to suffer most are the unqualified practitioners who have hitherto succeeded in posing as doctors and dentists, thanks to the lack of a central national register.

### FRAUDULENT MEDICAL CERTIFICATES

Another new legal enactment concerns the medical practitioner who in the past has promoted malingering by the issue of misleading medical certificates. In a letter dated August 8th, 1935, addressed by Monsieur Laval to the President of the Republic, it is pointed out that, in the present state of the law, the authorities are unable to bring before a court of justice the doctor who issues misleading medical certificates enabling their recipients to claim undeserved pensions or grants. Accordingly, Monsieur Laval has included among his emergency decrees a modification of the first paragraph of Article 160 of the Penal Code, which henceforth reads: "Every doctor, surgeon or other medical officer of health who, to favour someone, certifies untruthfully to diseases qualifying for dispensation from public service or for the receipt of a pension

or grant from the State or a public body, shall be punished with imprisonment for a minimum of one year and a maximum of three years." This decree will have to be ratified by Parliament, but whatever its ultimate fate, it should have a quite definitely inhibitory action on the light-hearted dispensing of documents certifying to the reality of unreal diseases.

### CONTROL OF MEASLES

A recent epidemic of measles in Saint-Étienne, a French town of some 200,000 inhabitants, is the subject of an informative study in the *Revue d'Hygiène et de Médecine Préventive* for October. The author, Dr. Poulain, the town's medical officer of health, has collected and classified the records concerning measles in Saint-Étienne since 1891, and he has found that in all but 5 of the 44 years under review there have been outbreaks of the disease. Their average duration was nine months, and after attaining their maximum in March and April they usually petered out in July or August. Those of greatest severity were usually seen at three-year intervals. Since 1891 there have not been two successive years without an outbreak of measles in Saint-Étienne, and throughout this period and until 1930 there has been little change in the mortality from its pulmonary complications. There was thus a useful and reliable background by which to judge the efficacy of the measures Dr. Poulain put into force in the epidemic which he describes, and which began in November, 1933, and lasted during the first seven months of 1934.

The first to suffer were some 70 soldiers of the garrison. The deaths of 7 of them created a stir which facilitated the educational and administrative measures Dr. Poulain proceeded to promote. His two main principles were as far as possible to prevent children under the age of two from contracting measles and to avoid its complications—notably those of the respiratory tract—in children over this age. For children under two he sought to prevent infection by discouraging their attendance at welfare centres and similar institutions designed for their welfare but liable to become foci of disease. For children over the age of two, he considered it useless to close the schools, but he made the parents realise that a child with coryza should at once be kept at home. For children of all ages his advice was that hospitals should be given a wide berth. Such festivities as public Christmas tree parties were suppressed. The serum of convalescents was available in quite inadequate quantities, for though 17 of the aforementioned soldiers served as donors between the seventh and ninth day of defervescence, attempts to induce the civilian population to serve in the same capacity proved remarkably futile. But the serum (what there was of it) proved a great success, no complication such as bronchitis being observed in any of the cases thus treated even when they were given the serum comparatively late. What was, however, most impressive was the remarkable fall in the mortality of this epidemic compared with that of earlier outbreaks. The mortality from the complications of the respiratory tract was 11·3 per thousand as compared with 32·3 in other years of severe epidemics; indeed it was even less than the corresponding mortality in the years without any definite epidemic of measles. This achievement is attributable to the combination of measures adopted and not to any one of them in particular; and credit should be given to the lay press for its success in transmitting instructions to parents to keep their children at home when the weather was too cold for them. Dr. Poulain concludes with the calculation that though his measures were simple and improvised, they saved at least 50 lives in infancy, and as many others between the ages of one and five years.

### ANTHRAX

Anthrax is notifiable in France when it develops under industrial conditions but not otherwise, and the available figures give a false impression of its rarity. Even so, there seems to be no tendency towards its abatement; the annual average for the 24 years 1910–33 is 43, with a case-mortality of 11·5 per cent. Dr. E. Agasse-Lafont (Presse méd., August 14th, 1935, p. 1291) reports that the Commission d'Hygiène Industrielle has been discussing the course to be recommended when a wound is suspected, without being convicted, of being infected with anthrax. Should an aseptic dressing be applied, or should antisepsis, with tincture of iodine, be used? The evidence in favour of the tincture of iodine ritual was singularly unconvincing; and if the inclusion of iodine in standard first-aid outfits recommended to industry by the Minister of Labour was still upheld, it seems to have been countenanced as a gesture rather than for any more material motive. Asked by the Ministry to give his opinion on the subject, Dr. Perrin, with an experience of more than 300 cases, wrote: "At the Saint-Denis Hospital, as soon as anthrax is diagnosed, treatment with serum is instituted, and we can say that at present deaths are almost rarities. Painting with tincture of iodine is as useless as it is ineffective." The instructions issued by the Pasteur Institute with its serum state that "local treatment (cauterisation, injection of iodine) may be dispensed with when serum is given"; and when asked to give an opinion on this subject, the sero-therapeutic service of the Institute replied last December with Delphic diplomacy that "local treatment cannot be injurious. The doctor in charge must decide whether it is necessary or not." Dr. Agasse-Lafont endorses this formula as a faithful representation of our knowledge, and goes on to emphasise the supreme value of general treatment, notably serotherapy.

### ADVANCES AND THEIR APPLICATION

A subject raised by Dr. Batier, of Strasbourg, last year is of perennial interest: how best may we introduce new forms of treatment to the medical profession so that their benefits are soon gained by the public? The alternative policies he recognised were the dictatorial and the persuasive. The first conceives of the public health authorities as a kind of link between the more advanced members of the profession and those whom character or circumstances cause to lag behind; the duty of these authorities would be to "recommend," in the administrative sense, whatever measures were approved by the élite of the profession. Batier provided a telling illustration of his meaning when he referred to artificial pneumothorax—advocated for years, and even decades, by the expert but ignored by the rank and file. And though it is true that the consultant sometimes shows obtuseness where the general practitioner has a quick grasp of realities, there have certainly been occasions when much time had been lost in making use of useful advances. More hopeful, however, than Batier's dictatorial solution is his alternative: teach the younger men, and in due course their therapeutic achievements will compel emulation by the older generation. Perhaps. This happy vision of the young teaching the old must carry conviction, at any rate to the young.

# POST-GRADUATE LECTURES

OUR series of summaries of lectures given at the recent post-graduate courses in London teaching schools is continued this week. Dr. Lightwood, Dr. Lloyd, and Mr. Tudor Edwards all spoke at Westminster Hospital, the addresses of the two last being delivered consecutively.

## SOME POINTS IN THE DIAGNOSIS AND TREATMENT OF DISEASES IN CHILDHOOD

(DR. REGINALD LIGHTWOOD)

*General approach to the patient.*—On first seeing the patient we should take the history; then make our examination and *complete it* before doing the real thinking which leads to diagnosis. Parents hang attentively on the questions the doctor puts and attach great importance both to what we ask and our method of asking it. It is a mistake to adopt a menacing, third-degree, Scotland Yard attitude. Always welcome a child patient with a smile; he is meeting somebody strange and is apprehensive. A children's doctor must not find it painful to smile and to be friendly to his patients. The child who screams down the consulting-room is usually a spoilt child, but never tell the mother that her child is spoilt, or you will be unlikely to see her again. Take her aside and then lead her spontaneously to suggest that her child is a bit spoilt; this can be done with a little tact. Never criticise her in front of the child; it is bad for home discipline.

*History taking.*—The secret of success is to adopt a routine of questions, which needs a little trouble before it becomes second nature. Intelligent questions, besides giving the information you want, will favourably impress the mother with your competence. For instance, in the case of an infant, ask whether full-term or premature; the weight at birth; the weekly gain; the feed; the interval between feeds, and whether both breasts are used at each feed or alternately; whether the baby takes the breast well or interrupts his feed for any purpose such as failure to breathe through the nose; whether he brings up wind successfully after feeding. Then ask about the stools; how often passed; are they formed; what is their consistency and colour; is there any flatus? Ask the questions quickly enough so as not to waste time, but not so quickly as to muddle the mother.

In dealing with a child I treat him almost as if he were grown-up and never patronise or talk down to him. It is important to get his confidence so that he will not back away and have to be pursued round the consulting-room. Come to the examination gradually. After a general glance, start by a friendly stroking of the abdomen, then palpate each part of it in a definite order. I always start with the left iliac region, then the left hypochondrium, and so, anti-clockwise, to the right iliac fossa. Children do not always like percussion and the stethoscope, and these should be used gently and tactfully. Always complete your examination, including the fauces and urine, and do not omit any part of it because the diagnosis already seems clear.

*Value of the sleeping pulse-rate.*—The sleeping pulse-rate, plotted on the same chart as the day pulse-rate, is essential in the examination of certain cases of heart trouble. In the normal child it should be 10 to 15 beats slower than the day pulse. In severe rheumatic carditis the two rates approximate and are both faster than in health. The sleeping pulse-rate will give an idea of when the patient can be allowed to get up; for when the nocturnal tracing retreats again from the day tracing, assuming the normal interval, and the tachycardia is disappearing, then there is definite clinical improvement. Similarly, narrowing of the interval and nocturnal tachycardia give warning of a relapse. The sedimentation-rate is another useful indication of when carditis ceases to be an active inflammatory process, for with improvement it becomes less and then returns to normal, more or less in step with the sleeping pulse. The sedimentation-rate is also raised in arthritic rheumatism and infection of the tonsils, nephritis and pneumonia, and so forth, but, curiously enough, not in chorea.

*Nervous tachycardia.*—Some nervous children complain of vague pains, are easily tired and pale, show tachycardia, thumping of the first sound at the apex, and a suspicion of a systolic bruit. In this way rheumatism may be simulated. The sleeping pulse-rate will give the diagnosis between early rheumatic carditis and this nervous tachycardia, for in sleep the nervous influences are not at work and the pulse-rate is therefore normal. The child who is suffering from tachycardia and neurovascular debility is usually brought to the doctor because he is pale; the cause of this pallor is often fear or fatigue. After a few minutes in front of the fire with a picture book his colour often recovers. The pallor of anæmia does not disappear in this way. In this neurovascular syndrome there may be postural albuminuria and a night and a day specimen should be taken. Dyspepsia is also a common complaint. In treatment a régime should be sketched for the parents; fatigue should be avoided but stimulating exercise encouraged. Cold or cool baths are better than hot ones. The child should not be taken away from school, except possibly for the afternoon if conditions make for too much strain. One hour's rest during the day, lying down, is important. As a tonic, a mixture of hydrochloric acid, gentian, and nux vomica may be given, but not iron.

*Anæmia.*—In anæmia the pallor is best judged from that of the palms, which can be matched with those of the physician. A guiding principle in the treatment of anæmia depends on the colour-index; if it is low, iron will probably be useful; but not if it is high. Iron-deficiency is, however, by far the commonest cause of anæmia. Reasonably big doses of iron are required; ordinary reduced iron mixed with sugar is invaluable. Even a premature infant can take it, and the dose for a six months' child is gr. ¾ and for infants over a year grs. 2. The saccharated sugar of iron is useful, as is the proprietary preparation Ferrodic. Choose ferrous preparations and avoid organic compounds.

*Drug tolerance.*—Infants tolerate some drugs very well, especially belladonna. This for instance is a sheet anchor in nervous enuresis, in which some kind of homely suggestion also helps by increasing confidence. The commencing dose of belladonna is 5 minims of the tincture, increasing to 10 and then to 15 minims until the enuresis is controlled or symptoms of intolerance appear. If this drug is successful, continue it for two months and then diminish it gradually. Chloral is the safest and best drug for infants with convulsions; they are tolerant to it and as a single dose, grs. 5 can be given per rectum. Before starting to treat epilepsy the physician should

make sure of his diagnosis and that the fits are regularly recurring. Potassium bromide, grs. 5 three times a day, should be continued without intermission until the next fit, when it should be increased, and so on until no more fits are occurring. The dose ascertained in this way is continued for two years. The bromides of course are not always successful in epilepsy, but should receive first trial.

## MEDICAL TREATMENT OF PULMONARY TUBERCULOSIS

(DR. W. E. LLOYD)

THE successful treatment of pulmonary tuberculosis depends upon one factor more than any other, and that is early diagnosis. Although the outlook for the tuberculous patient has improved greatly since the wider use of methods aimed at resting the diseased lung by collapse therapy, I think that further improvement depends upon earlier diagnosis.

Pulmonary tuberculosis begins in the majority of cases as a localised lesion in one area of one lung, and it should be our aim to attempt its diagnosis in this stage. Unfortunately, however, such localised disease is often so silent and insidious in its development that any disturbance of health to which it may give rise is so trivial as to pass unnoticed by the patient. How then can more early cases be diagnosed? This can be done by regarding every patient, especially a young adult, with symptoms of chest disease as a possible case of tuberculosis. Such a case calls for the most complete investigation. A detailed history may reveal important facts—e.g., contact in childhood with a case of tuberculosis, or a history of pleurisy. Hæmoptysis is a symptom which calls for special mention, for it is often the first indication of tuberculosis. A patient who coughs up blood rarely fails to consult a doctor, and it is therefore not surprising that many cases owe their early diagnosis to the occurrence of hæmoptysis. Physical examination of the chest usually proves negative in the early case. The patient should be encouraged to produce a specimen of sputum for examination for the presence of tubercle bacilli. The most important investigation of the suspected early case is a good radiogram of the chest, and there is much truth in the remark that the earliest lesion of pulmonary tuberculosis is seen and not heard. The question is often asked if early tuberculosis can be diagnosed by radiography alone. I think the answer is yes if the complete data of the case are considered in conjunction with the radiogram. Unfortunately, by the time an X ray film has been taken, the case can no longer be called an early one; but by insisting on radiography of the chest for every patient with chest symptoms, as soon as these develop, more early cases will be diagnosed.

Having found the early case, what are the principles which govern its treatment? The pathogenesis of tuberculosis in a young adult is obscure and little is known as to its precise nature. The development and increase of a tuberculous lesion in the body indicates that the defensive processes have failed, and it is hoped failed temporarily. The treatment of such a case is directed to the general health of the patient with the object of increasing immunity, and the best way to do this is by advising a period of rest in bed. Treatment by this means is the basis of the successful treatment of the early case.

As soon as pulmonary tuberculosis has been diagnosed it is important to explain to the patient that adequate treatment of the early stage of the disease is essential and the coöperation of the patient must be obtained. At least two months' rest in bed should be advised, and this should be commenced as soon as possible after the diagnosis has been made. Rest in bed calls for adequate nursing facilities and more hospital or sanatorium beds are necessary for the bed treatment of the early case. Signs of toxæmia, as indicated by raised temperature and pulse-rates, usually soon disappear, and estimation of the blood sedimentation-rate at frequent intervals is a helpful guide in determining the degree of toxæmia present. If toxæmia persists in spite of rest in bed (and this to be efficient must be rigidly enforced), the question of other methods to help the patient should be considered. Of these the most important is that of resting the affected lung by artificial pneumothorax. In every case of unilateral tuberculosis this method of treatment must be discussed. Opinions differ as to the best time to commence collapsing the lung. There are many authorities who advocate that a pneumothorax should be attempted as soon as the diagnosis of unilateral tuberculosis has been made, even if signs of toxæmia are absent. I do not share this view, and in the early case I think it advisable to concentrate on general treatment rather than on the local condition of the lung, and recommend (as indicated above) at least two months' rest in bed. At the end of this time, another radiogram should be taken and compared carefully with the previous film. Often definite improvement will be observed. The patient is then allowed out of bed for gradually increasing periods until at the end of another month he is ready for the next stage in treatment—namely, sanatorium régime. Here the arrest of the disease as shown by radiography is subjected to the test of increasing exercise, and the sanatorium should be regarded chiefly as a place where the patient's reaction to a more active life can be watched accurately. In many of these early cases he is well enough to return to work after six months' treatment, but the importance of supervision of the patient after leaving the sanatorium cannot be over-emphasised. The case should be kept under observation for at least two years and control radiograms taken every three months. Such is the routine treatment of the early case in which the original lesion had improved radiologically after two months' rest in bed. If in spite of rest there has been no such improvement, an artificial pneumothorax should be attempted. The above remarks apply only to the patient in whom the disease is localised to a limited area of one lung.

The next type of case to be considered is the one in which there is extensive unilateral disease, and this forms a much larger group than the type so far described. Rest in bed, together with artificial pneumothorax, is the ideal method of treatment. In these cases the best results of pneumothorax are obtained after a preliminary period of three or four weeks' absolute rest. As a rule, there will be evidence of cavitation in the radiogram. A pneumothorax may not collapse a thick-walled cavity, and the case with an uncollapsed cavity in a partially collapsed lung calls for the coöperation of the surgeon. Good results may be obtained by cauterisation of adhesions or by paralysis of the diaphragm after evulsion of the phrenic nerve.

If one lung is extensively infiltrated by tuberculosis it is more than probable that the other lung is not entirely free of disease. In the early days of pneumothorax treatment it was not considered advisable to attempt it if there was any disease in the other lung. This depends upon the extent and

type of disease in that lung. If the radiogram shows apical disease with evidence of fibrosis this is not a contra-indication to collapse the badly affected lung.

The success of pneumothorax treatment depends largely upon the care with which the case is supervised after the patient has left the sanatorium and is attending for refills. X ray screening of the chest is necessary before each refill. By this means it is possible to maintain an almost constant degree of collapse and displacement of the mediastinum is avoided. In this way also will early collections of fluid in the pneumothorax cavity be diagnosed. Fluid occurs at some time or other, in small or large amounts, in nearly every case. Fluid which remains sterile and free of tubercle bacilli may be left unless it is so large in amount as to cause dyspnœa when it should be replaced by air. Fluid, however, may become purulent and a pyopneumothorax gives rise to the greatest anxiety. Fortunately it is uncommon, but it must be kept in mind as one of the complications of pneumothorax treatment. Another great disappointment is the case which has done well after treatment by this method and in which a fresh area of disease develops in the other lung. This development calls for further rest in bed with the object of preventing the new lesion from spreading. The value of sanocrysin or other gold preparation has been proved in such a case but it may be necessary to collapse the recently affected lung and allow the other lung to re-expand gradually. These points are mentioned to indicate the importance of accurate supervision of pneumothorax treatment. The general health of the patient must also be watched closely, and the amount of rest necessary during the twenty-four hours assessed according to the patient's condition.

It should always be remembered that pneumothorax treatment may not be possible owing to the presence of pleural adhesions, and it will save much disappointment if the patient is told that the treatment may not be successful. If pneumothorax is impossible and the disease is unilateral the question of surgical methods of collapse, including apicolysis and thoracoplasty, should be considered.

The next type of case to be discussed is the one in which there is bilateral disease when first diagnosed. Rest in bed is again the most important method of treatment and is governed by the degree of toxæmia present. If the latter persists the administration of gold salts is worthy of trial, but only if there is no evidence of enteritis and the urine is free of albumin. Small intravenous doses of 0·1 g. sanocrysin given at weekly intervals over an extended period is the best method of administration. Some authorities advise the use of bilateral artificial pneumo thorax in these cases but the results are disappointing. The results of treatment by prolonged rest in bed often exceed expectations and an attitude of optimism towards the patient is justified.

Finally, the principles of treatment of senile tuberculosis. In late life toxæmia is usually absent, and treatment should be on general lines. The dyspnœa which is often a conspicuous feature of these cases calls for a life of restricted activities. Active treatment in the form of collapse therapy is not to be recommended. The condition may be associated with chronic bronchitis and emphysema, and the tuberculous basis of the disease may be overlooked until the sputum is examined. From the public health point of view these cases are a fertile source of infection and great care must be taken to prevent spread of infection to younger members of the household.

In conclusion, I should like to repeat that the successful treatment of pulmonary tuberculosis depends upon its early recognition; and as facilities for radiological examination of the chest are increasing, we may hope to meet with more such cases if it is remembered that radiography is essential for early diagnosis. If the disease has become well established the question of some form of collapse therapy in conjunction with adequate rest has to be considered and the coöperation of medical and surgical treatment gives results which have undoubtedly improved the present-day outlook for the patient suffering from pulmonary tuberculosis.

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## SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS

(MR. TUDOR EDWARDS)

THE objects of surgical treatment of pulmonary tuberculosis are rest, immobilisation, and relaxation.

They may be used to supplement measures such as artificial pneumothorax, which has already been mentioned, and which may be only partially successful or completely impossible as a result of partial or complete synthesis of the pleuræ. In the former case it is natural to expect adhesions to be present over the active areas of disease in the lung, and for this reason the value of the treatment may be restricted owing to the adhesion preventing collapse of an underlying cavity. If these have been present for some time it is advisable to attempt to divide them and allow the cavity to collapse. Open operation has gone out of favour and the operation is performed by introducing, under local anæsthesia, a thoracoscope into a convenient intercostal space. It will generally be found that these adhesions are more numerous than the radiogram would suggest, but those of a fibrous nature, if not too extensive, can be divided by a cautery introduced through another intercostal space. Any damage to lung will lead to complications much more serious than the condition for which the operation is undertaken, and when there is serious risk of this in the division of the band it is well to consider other measures to produce collapse of the cavity.

*Phrenicectomy* is a relatively simple procedure, although serious complications have been described, largely due to errors of technique. This simplicity naturally produced an excessive enthusiasm which has more recently been followed by an excessive condemnation. The value of the operation depends upon the paralysed diaphragm rising, relaxing and resting the lung. It has definite value in the control of symptoms and a less limited value in the control of the disease. As it is now often performed as a temporary procedure by crushing the main phrenic nerve and dividing the accessory branches, it possesses many of the advantages of artificial pneumothorax (A.P.). In combination with A.P. it will enable cavities, strung between apical and diaphragmatic adhesions, to collapse. Certainly it is of value at the termination of artificial pneumothorax treatment, especially for cavitary disease, where the re-expansion of the lung to the full hemithorax may be impossible and will result in fluid formation, deviation of the mediastinum to the affected side or reopening of the cavities and reactivation of the disease. In soft-walled apical cavities, which have closed after temporary phrenic interruption, the paralysis may be made permanent. In cavitation of the lower lobe closure of the cavity will often follow

the operation, particularly in cases where generalised adhesions prevent the induction of pneumothorax. In patients with extensive fibro-cavernous disease, phrenicectomy as a sole curative measure is of no value, and it is its employment in this type of disease that has led to its general condemnation by some people. Its value in hæmoptysis is debatable, and is more likely to help the patient with repeated small hæmorrhages, and it is of more danger than value in the larger hæmorrhages.

In controlling diaphragmatic pain either during or apart from pneumothorax, the operation has a distinct place. Finally, in assessing its value it is advisable to ask oneself whether it is intended to act as a curative measure or as a means of controlling symptoms and to judge the results accordingly.

*Apicolysis and Thoracoplasty.*—The larger surgical procedures, such as apicolysis and more particularly thoracoplasty, depend upon the patient showing evidence of some resistance to the disease, and are therefore measures which are largely reserved for the more chronic stages. They are employed particularly in patients with fibro-cavernous or fibrous disease in which there is deviation of the mediastinal structures, as seen radiologically, to the affected side. Where the collapse of the lung to be attained is a localised one such as in apicolysis or localised thoracoplasty, the condition of the "better" lung is not so important as in the complete thoracoplasty; in fact, both the localised operations can be carried out successfully bilaterally. Therefore, active disease in the "better" lung except possibly a small apical focus is usually taken as a contra-indication to complete unilateral collapse by thoracoplasty.

Laryngeal disease is not a contra-indication unless very extensive, nor is unilateral renal tuberculosis; occasionally even intestinal tuberculosis of not too severe a nature will permit the operation and clear up with the pulmonary improvement. Technical problems I do not intend to put before you, although they are of considerable importance; but the operation of apicolysis necessitates the introduction of a foreign body—i.e., paraffin wax—into the space stripped up between the parietal pleura and the chest wall, and this, like other foreign bodies, is not always well tolerated by the tissues, and may subsequently discharge on to the surface or even into the pulmonary cavity. In general, I reserve this operation for older patients with rather more rigid chest walls, who tolerate a thoracoplasty less well.

As regards the localised apical thoracoplasties they require a much more extensive resection of the individual ribs, although the number resected is usually confined to four, five, or six.

*Tuberculous Pyothorax.*—Finally, a few words about tuberculous effusions. They are of two main classes: (1) where the underlying lung is unaffected and (2) where there is disease in the underlying lung. These effusions may be serous, tuberculous purulent, or tuberculous purulent with secondary pyogenic infection. The last group is the most serious and is often fatal. As regards the tuberculous purulent group without disease in the underlying lung, aspiration and lavage will often clear them up entirely by expanding the collapsed lung; if, however, this is diseased, expansion may result in reactivation, and it is advisable to perform a thoracoplasty relatively early. In the secondarily infected group, aspiration and lavage may not control the infection and intercostal drainage will be required. If the patient makes sufficient progress to justify the measure, thoracoplasty is indicated when the patient is sufficiently fit, although complete closure of the extensive pyothorax cavity is often difficult to attain.

# OPENING OF THE MEDICAL SCHOOLS

THE Minister of Health spoke at Guy's Hospital last Tuesday, Sir Walter Moberly at the Royal Free Hospital on Oct. 1st, and Sir Francis Acland at the Royal Dental Hospital on the 4th. The passages printed below are extracts from their addresses to the students at the opening of the session.

## THE PHYSICIAN AS MAN OF THE WORLD

BY SIR KINGSLEY WOOD, P.C., M.P.
MINISTER OF HEALTH

I NEVER think of Guy's but I recall Bob Sawyer, student at Guy's, associate of the immortal Pickwick Club, and jolly good fellow. Mr. Pickwick had a high opinion of medical students. "There's a couple of Sawbones downstairs" said Sam Weller. "I am glad of it" said Mr. Pickwick, "They are fine fellows; very fine fellows; with judgments matured by observation and reflection; tastes refined by reading and study. I am very glad of it."

I am sure the world was the better for Bob Sawyer. If he leaves a lasting impression of imbibing much of his wisdom through a bottle-neck, we must remember that fiction is selective and that in the "Pickwick Papers" we see him for the most part in what might be called his unbuttoned hours of ease. Of Bob's work as a surgeon in India—which he reached via Carey-street—we know nothing, except that he resolved "to try a little abstinence" and "has since been doing well." We remember him, not for his technical skill, though I have no doubt that was, ultimately, considerable, but as an associate of the Pickwick Club, a good companion, a man among his fellows—a theme to which I shall return.

Most of you who are now students or have just qualified will, I suppose, take up general practice, and to you I would like to address myself particularly, for two reasons, one the perfectly good democratic reason that you *are* the majority, and the other that, whatever the importance of ancillary services, an up-to-date and progressive corps of general practitioners is essential in our organisation for the maintenance and improvement of the public health. The health of a nation is the very basis of its well-being. A low standard of public health means waste and burden. In the fight for better health the general practitioner is in the front line.

I will not talk to you of the 'ologies—biology, physiology, bacteriology, and the rest; your teachers and indeed any one of you yourselves could do that better than I. I am but the layman looking at the doctor. Yet I am temerarious enough to think that I have something to say about your preparation for your great task. Those here who guide you, lead you, inspire you, propel you—what you will—will concentrate, and rightly, on the technical side of your art, diagnosis, therapeutics, how to set a

limb and dose a fever. But in formal lectures, clinics, and so on, time is always at their heels. They will tell you, being honest men, but they will not have time to tell you often, and they will have hardly any time at all to see that you profit by the advice, that your education should not be limited to medicine, surgery, and midwifery, that a much wider interpretation should be given to the art of medicine, that the love of man should be linked up with the love of the Art.

The doctor-priest of ancient times professed knowledge of all the mysteries of life and death. Even up to fairly recent times disease was attributed to evil spirits which had to be placated or cast out. It is not so very long since Parliament in an Act intended "for the avoiding of sorceries, witchcrafts and other inconveniences" entrusted medical registration in London to the Bishop and to the Dean of St. Paul's. To-day, however, the mystic and the empiricist have given place to the scientist. Reason reigns in the place of authority. The doctor is no longer a priest or a magician. He no longer dresses himself up, at any rate in civilised countries, in the magician's mask of the "medicine-man" or the medieval plague doctor. He has even in large measure discarded the silk topper. But an element of magic is still present, and blessed alike in works and in pocket is he who possesses it most. This remnant of magic is what has been described as the "bedside manner." I should prefer to phrase it as the human sympathy of the doctor, and it is probably more important than nine-tenths of the drugs in the materia medica.

Not that I wish to under-rate the value of some drugs at some times. Indeed, seeing that the inventor of Dover's powder was the same Thomas Dover who was largely responsible for your founder making his fortune out of the South Sea Bubble, I hope I should not be so foolish as to cast any doubt within these walls on the virtue of that particular specific. I think, however, that it is not without interest that some years ago an analysis of prescriptions in England and in Scotland showed that the Scots and the English throve to some extent on different mixtures, the Scots, incidentally, managing to get along with less of them than we did.

I have used the term human sympathy as a convenient phrase. What I want to emphasise is that a patient is a man and not a machine—a fact which it is quite easy to forget. "One man's meat is another man's poison" is true in medicine not merely as regards drug tolerance but as regards the whole attitude of the physician to his patient. You must have knowledge not only of medicine but of many men. Never forget that morbid processes may work in many different ways. Your patient's illness is related, and intimately related, to the conditions of his life, his work, his games, his diet, his friends, his mode of thought, his upbringing. To treat his illness you must be capable of understanding the whole complex which is the man. How are you to do that? By knowing much of many men. By going among men, of all kinds. By helping in affairs on local bodies. By having, acquiring, and maintaining a cultural background and not being a mere technician.

The physician, in short, must be a man of the world and of affairs. Let him learn about bones, morphology, pathological processes, and so on, and let him learn them well, but let him always remember that he is treating not a universal robot but a human being, and that his treatment will be better and more effective the better he himself is as a human being. And just as it is important that your technical knowledge should keep pace with the times, by occasional post-graduate refresher courses as well as reading and practice, equally is it important that you should keep up the wider interests and resist, as far as you can, and for as long as you can, the narrowing process which sets in inevitably as youth travels further from the east. You have my fervent wishes for your success in the hard but noble path on which you have entered, and I hope I have your good will in mine.

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## THE PURPOSE OF UNIVERSITY TRAINING

By Sir Walter Moberly, D.S.O., Hon.D.Litt.
CHAIRMAN OF THE UNIVERSITY GRANTS COMMITTEE

At the beginning of a new university session it seems proper to invite you to think of some of the aims of a university training, and I am going to take a very homely text:

> If all the good people were clever,
> And all clever people were good,
> The world would be better than ever
> We thought that it possibly could.
>
> But somehow it's seldom or never
> The two hit it off as they should;
> For the good are so harsh to the clever
> And the clever so rude to the good.
>
> So friends let it be our endeavour
> To make each by each understood;
> For who can be good as the clever?
> Or clever so well as the good?

The implication of those lines is that people fall into two different classes which should not be estranged from one another—indeed cannot do without one another. It is obviously the business of a university training to train the mind in the direction of cleverness. But cleverness is not enough, and goodness is not enough, and the real business of a university is to try to produce that fusion of cleverness and goodness which I should call wisdom.

In the first place, on the more intellectual side you come here to try to acquire that mastery of your profession which distinguishes the professional from the amateur. Further, you do not come merely to serve an apprenticeship to your craft; for the great characteristic of modern medicine compared with olden days is that medicine is now more securely based on science. The result of this change is that in medical matters the difference between the expert and the quack is generally understood and is regarded by the public as important, and it seems to me that in this respect the medical profession is in a much happier position than others—teaching and politics for example.

To-day, moreover, in every university and college we have such active participation in discovery and research as makes the whole of your teaching much more real. "To learn from one who is himself occupied in learning is like drinking running water. To learn from one who has already learned all he is to teach is like drinking 'the green mantle of the stagnant pool'."

On the other side it is most needful that you should widen your sphere of interest. You come to a university not merely to prepare yourself for your job but to prepare yourself for public service. Can these wider things be taught? Physics, chemistry, and medicine can be taught; but can goodness and

wisdom be taught? We are living in a crisis of civilisation, when the general movement of world affairs has got out of human control. The danger of war, for example, comes in the main from voluntary human actions. Nobody wants war; but through the absence of sufficient understanding things have got out of control of human beings. What are the universities of the world doing about it? Are they trying to turn out graduates who will have a larger portion of wisdom and judgment for the want of which the world is in danger of perishing?

But there is another difficulty. Supposing universities are paying their best attention to these tasks, we still come up against the paradox that the world does not set a very high value on the university-trained mind. If it were proposed to-morrow that the present Cabinet should be replaced by the professors of political science at the British universities, not many would be in favour of the proposal. This general opinion is based on the undoubted fact that people who have had academic training do not always make good practitioners. If university graduates are to be of use to the world they have got to consider not merely principles and the deductions from them, but the application of these things to current affairs. On the other hand there is something in the university type of thought the practical man cannot really do without; for the merely practical attitude is apt to betray us unless the world remains constantly much the same. It is for the want of the fusion of the two outlooks—the academic and the practical—that the world is largely going wrong. But if as a whole the universities are not making their proper contribution the fault, I think, lies not so much with organisation or authorities as with the students who do not always attempt to get out of university life what they ought to get.

I am sure one is missing a great deal of what university life ought to give unless one gets all the contact one can with other students: "get acquainted with your neighbour; you may like him." Unions, hostels, and the like provide opportunities for that kind of mixture. I would also advise you to take all the opportunities you can get of informal contact with members of the staff outside the lecture-room and laboratory; for I find there is nothing that so stands out in my mind as certain chances of contact with men whom it was an education to meet in an informal way. In the practice of medicine later on the human factor must be all-important; you are always meeting human beings at critical points of their lives. You must therefore learn to understand other people, to put yourselves in their places; but you must also learn judgment—to learn, that is, to try to make up your mind on something about which you are not sure. All of us must be ready to judge, in subjects which are not our own primary subjects, between the expert and the quack.

One last and most important point. I should say that any graduate who leaves a university without having made progress towards acquiring a philosophy of life has missed part of the purpose of university training. It is not the business of the university to tell you what your philosophy of life should be, but it is its business to help you to find your own. From the point of view of training for life, for producing that wisdom which is the real end and aim of a university career, the failure to attain a philosophy of life is a fatal failure. Cleverness by itself is not enough and goodness by itself is not enough.

## THE DENTIST'S MIND AND FINGERS

By Sir Francis Dyke Acland, Bt., P.C., M.P.
CHAIRMAN OF THE DENTAL BOARD OF THE UNITED KINGDOM

I NEVER see students unless I attend the opening of a dental school, or a new department of one to which the Dental Board have contributed. But I see a good many of them in the stage just before they become students—or don't, as the case may be, the event depending on a short conversation I have with them at the offices of the Dental Board, with our treasurers listening and helping me in very difficult decisions. And if I try to tell you what, in a short ten minutes, I try to find, it may indicate the sort of qualities which seem to me likely to make a student a valuable member of the profession.

"Character, keenness, individuality" express it fairly well. I know that many of you have had to cram for the Higher Certificate examination, one of the most pestilent hindrances to good secondary education which we have, and have hardly had time to develop any interests except in the subjects contained in the syllabuses which that examination covers. And we try to make allowances for that. But one wants to find something, and it is difficult to describe it more closely than in the three words I have used. But this conversation, which I will give verbatim from one which occurred a fortnight ago, illustrates the absence of the qualities I look for, and it may show you why I think they help to make a good dentist. They certainly help him to get a start on his professional training when he needs assistance from the Dental Board.

ME: I notice you passed your Chemistry in May; what have you been doing since?—VICTIM: I've been at home.

Yes, but have you done any biology, or made any sort of contact with professional work?—No.

Not been to the workroom of any dentist to see the sort of thing you may be doing later on?—No.

Well, what have you been doing? Have you any hobbies?—I did a little fretwork.

Yes, I know, we all catch fretwork like whooping-cough when we are about thirteen; anything else? Have you done any carpentry, or wood-carving, or cabinet-making?—No.

Any making of models or wireless?—No.

Can you tell me the names of any books you've ever read?—I don't think so.

Well, what have you been doing? Have you played any games?—Tennis.

Very well, anything else, since May?—I'm keen on gardening.

Splendid; tell me the names of three sorts of potatoes.—Only flower-gardening.

Good; tell me the name of any sort of rose.—I'm afraid I can't; I just like to keep the garden bright.

And after he has faded away one notices that the family consists of himself and four sisters, which perhaps explains things. And he doesn't get a bursary.

A dentist must be more than a hewer of vulcanite and a drawer of teeth; he must be alive, and alive of course to his finger-tips. But I don't believe that a man's finger-tips can be really alive unless he is alive in himself. That line of Terence which brought down the Roman theatre twenty-one centuries ago "nihil humanum alienum a me puto" might well be a motto for the profession. I translate it, roughly, as "I'm keen on every blooming thing." We none of us know what we are really on this world for; but I hazard the suggestion that our minds and bodies and hands were given us to be used. You

only get expert use of anything by practice; and 16 hours a day isn't too long to be practising either mind or body, or both together, as you will find you have to do if you are to make good as practitioners.

Let me tell you a secret. I think very little of my mind, for I don't really trust it, but I think a great deal of my fingers. I have to use my mind, such as it is, and I get the chance to use my fingers hardly ever. But I would take on any of you at putting that tiny brass wire back into a hypodermic needle, size 18, first shot. Not only because I had to do it, or try to, after injections of adrenaline six times a day for three years, but because (now that the asthma has departed) I still try to keep the fingers in training by practising it before I go to bed. Probably quite silly, but do you get the idea? Be proud of all the powers you have and keep them in hard training by exercise.

You have a desperate lot of work to get through here, as I well realise, but don't just do it and be satisfied. Keep your minds sharp by rubbing them up against public affairs, against books, against music, even in criticism of your lecturers and teachers. Better even, I suppose, be a jazz fan than nothing. And try to make sure with your fingers that you do everything you have to do not well enough to pass, but in a way which makes you feel your life in your fingers in every movement you make. If you haven't got to the stage of taking out molars without breaking the roots, try taking a walnut out of its shell and its skin quickly without a break. It is a different dexterity but, I imagine, equally difficult.

# THE SERVICES

## ROYAL NAVAL MEDICAL SERVICE

Surgs. Rear-Admirals P. T. Nicholls, C.B., M.R.C.S. Eng., and J. S. Dudding, C.B., O.B.E., M.R.C.S. Eng., have been appointed Hon. Physicians to the King.

Surg. Lt.-Comdr. E. T. S. Rudd to *Pembroke* for R.N.B., and to *Pegasus*.

Surg. Lt. M. Cay to *Dundee* (on recommg.).

### ROYAL NAVAL VOLUNTEER RESERVE

Surg. Comdr. W. H. Butcher to *Victory* for R.N.B.

Surg. Lt.-Comdr. C. Mason to *Victory* for R.N. Hospital, Haslar.

Surg. Lt. A. S. Pearson to be Surg. Lt.-Comdr.

Surg. Lt. E. C. Johnson to *Pembroke* for Chatham Hospital, and M. G. Stratford to *Royal Sovereign*.

Surg. Lt. (D.) H. P. Buchanan to *Pembroke* for R.N.B.

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The following appointments as Admiralty Surgeons and Agents have been approved to date Oct. 1st, 1935: Mr. H. M. Clarke, 45, London-road, Reading; Mr. T. D. Gillies, Lynbridge House, Tavistock; Mr. H. L. Pearson, Granville House, The Spa, Gloucester; and Mr. A. M. Bayne, 76, Wimborne-road, Bournemouth.

## ARMY MEDICAL SERVICES

The appointments announced under this heading in THE LANCET of August 24th (p. 457) took effect on Oct. 6th.

## ROYAL ARMY MEDICAL CORPS

Lt.-Col. A. M. Pollard, D.S.O., retires on ret. pay.

Maj. D. C. G. Ballingall, M.C., to be Lt.-Col.

### MILITIA

Maj. A. Picken, O.B.E., M.C., resigns his commn. and retains the rank of Maj.

### TERRITORIAL ARMY

Maj. W. Leslie, M.C., T.D., to be Lt.-Col.

Supernumerary for service with the O.T.C.—Lt. E. Shipman to be Capt. Gordon Nuttall Bailey (late Cadet, Uppingham Sch. Contgt., Jun. Div., O.T.C.), to be Lt. for duty with the Med. Unit, Univ. of Lond. Contgt., Sen. Div., O.T.C.

### TERRITORIAL ARMY RESERVE OF OFFICERS

Lt.-Col. and Bt. Col. J. V. Bates, M.C., relinquishes his commn. and retains his rank, with permission to wear the prescribed uniform.

Capt. E. A. Downes, from T.A. Res. of Off. (Gen. List, Yeo.), to be Capt.

## ROYAL AIR FORCE

Flying Offr. G. H. Morley is promoted to the rank of Flight Lt.

Flight Lt. (Quartermaster) F. W. Goodread is promoted to the rank of Squadron Leader.

Flight Lts. L. Freeman to No. 35 (B) Squadron, Bircham Newton; J. Kemp to No. 207 (B) Squadron, Bircham Newton; G. W. Paton to No. 3 (F) Squadron, Kenley.

Flying Offrs. C. A. Lewis to No. 29 (F) Squadron, North Weald; G. H. Morley to No. 12 (B) Squadron, Andover; J. W. Patrick to No. 12 (B) Squadron, Andover; W. G. S. Roberts to No. 33 (B) Squadron, Upper Heyford.

*Dental branch.*—Group Capt. C. Leslie Colbran, O.B.E., is placed on the retired list.

A new clause has been inserted into King's Regulations and Air Council Instructions to provide that an officer on half-pay who is likely to return to full pay may, with prior Air Ministry approval, be admitted to a Service hospital if suffering from a disability not attributable to the conditions of Air Force service. Other officers on half-pay may, with similar prior approval, be admitted to a Service hospital provided that the accommodation is not required for patients with a better title to admission. Retired officers who are not re-employed cannot as a rule be admitted to a Service hospital.

## COLONIAL MEDICAL SERVICE

The following have been appointed Medical Officers, West Africa: Dr. A. G. W. Branch, Dr. E. J. Bury, Dr. H. C. Foster, Dr. A. F. Fowler, Dr. J. S. McGregor, Dr. K. O'Toole, Dr. J. D. Reid, and Dr. V. T. Thorne. Dr. D. A. P. Hopkin and Dr. R. M. B. Lowis, appointed Medical Officers, Malaya; Dr. A. C. Pilkington, Medical Officer, Zanzibar; Dr. D. A. Smith, Medical Officer, Hong-Kong; and Dr. J. B. Henderson, Assistant Medical Officer, Falkland Islands. Dr. B. F. Home becomes Medical Superintendent, Mental Hospital, Singapore; Dr. A. G. H. Smart, Senior Medical Officer, St. Vincent; Dr. M. V. Boucaud, Medical Officer, Grade I., Colonial Hospital, Port of Spain, Trinidad; and Dr. L. M. Ram, Assistant Medical Officer, British Honduras.

## INDIAN MEDICAL SERVICE

The undermentioned officers have vacated appointments in India:—

A.D.H. and P.: Lt.-Col. R. Davidson, R.A.M.C.

A.D.M.S.: Col. E. W. C. Bradfield, C.I.E., O.B.E., I.M.S., Col. H. C. Winckworth (late R.A.M.C.), Brit. Serv., Col. H. E. Stanger-Leathes, I.M.S.

D.A.D.P.: Major A. Mearns, R.A.M.C.

D.A.D.H.: Major T. O. Thompson, R.A.M.C.

The undermentioned appointments have been made in India:—

A.D.H. and P.—Maj. T. O. Thompson, R.A.M.C.

A.D.M.S.—Bt. Col. W. H. Hamilton, C.I.E., C.B.E., D.S.O., I.M.S.

D.A.D.P.: Capt. T. B. Pahlajani, I.M.S.

D.A.D.H.: Maj. G. K. Fulton, R.A.M.C.

Lt.-Col. (Bt. Col.) W. H. Hamilton, C.I.E., C.B.E., D.S.O., to be Col.

Majs. to be Lt.-Cols.: H. C. Tait, M.B.E., W. J. Webster, M.C., J. C. Chukerbuti, and A. M. Ghosh.

Capts. to be Majs. (provl.): R. L. Frost, J. C. Drummond, D. M. Fraser, and J. F. Shepherd.

Lt. (on prob.) C. W. A. Searle is seconded while holding an appointment at Addenbrooke's Hospital, Cambridge.

*Indian Medical Department:* Capts. (Sen. Asst. Surgs.) to be Majs. (Sen. Asst. Surgs.): T. J. Gibson and J. H. S. Huffton.

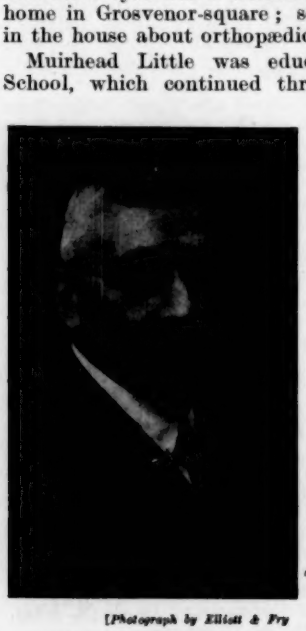
# OBITUARY

## ERNEST MUIRHEAD LITTLE, F.R.C.S. Eng.

WE regret to announce the death of Mr. Muirhead Little at his home in London on Oct. 2nd in his eighty-second year.

Ernest Muirhead Little was born in July, 1854, at Ealing, the fourth son of William John Little, M.D., F.R.C.P., who founded the Royal Orthopædic Hospital, gave his name to spastic paraplegia, and wrote a treatise on club-foot and analogous distortions. It was perhaps natural for that one of his sons who adopted medicine as a career to specialise in the same direction. Moreover, Dr. Little suffered from some shortening of the tendo Achillis for which Louis Stromeyer had treated him by division of the tendon, and Stromeyer was a welcome visitor at the Littles' home in Grosvenor-square; so there was much talk in the house about orthopædic surgery.

Muirhead Little was educated at Westminster School, which continued throughout life to claim his affection and to which later he sent his own sons. He went on from there to University College. On leaving college he went into business, but not for long; finding it uncongenial he made his escape to St. George's Hospital. His studies were interrupted during the Turco-Servian war of 1876, when he joined the ambulance sent out by the National Aid Society, and he did not qualify until 1880. From 1882–86 he was dispensary surgeon at the Dreadnought Hospital, and in the latter year, having taken the F.R.C.S. Eng., he was elected surgical registrar to the National Orthopædic Hospital and in due course gained a position on the honorary staff. Orthopædic surgery was then a very minor specialty; treatment was mostly instrumental and surgical interference confined to subcutaneous sections. Operations at the hospital were performed by the whole staff on one morning in the week, the out-patient waiting hall being temporarily converted into a theatre. Conditions at the Royal Orthopædic Hospital were similar, except that it was the house surgeon's sitting-room which was commandeered on Monday afternoons by two porters bearing a massive wooden operating table. No wonder that the King's Fund intervened and in 1905 secured the joining up of the Royal and the National Hospitals, to be united later to the City Hospital. Little was himself not at first in favour of this amalgamation, which was however to afford him the opportunity of practising modern surgery in a hospital of 446 beds instead of the 50 then at his disposal. After the charter had been granted, a small room on the ground floor facing Bolsover-street was converted into a permanent operating theatre. But Little was then over fifty and lack of opportunity had already handicapped him in acquiring new surgical technique; so that when the present hospital in Great Portland-street was opened in 1909 it was almost too late for him to take full advantage of its facilities. Ten years later he had reached the retiring age.



[Photograph by Elliott & Fry

MR. MUIRHEAD LITTLE

There were other positions in which Muirhead Little's gifts were not subject to artificial restriction. In 1895 he was appointed surgeon to the Royal Surgical Aid Society in succession to Herbert Allingham, son of William Allingham, the society's first surgeon. Little held that office for 39 years; on one occasion he saw no less than one hundred patients in the day and was very proud of it. Every year for 24 years he described the work of the Society in response to the Lord Mayor's invitation at the Mansion House meeting. During the war he was in surgical charge of Queen Mary's Auxiliary Hospital at Roehampton where disabled officers and men were fitted with artificial limbs. Many stumps were unsuitable for fitting and required re-amputation, and he brought an immense experience to the aid of these difficult cases. At this time he published a book on artificial limbs and amputation stumps which is the standard book of reference on the subject. Later he worked for the Ministry of Pensions. In 1913 he was vice-president of the orthopædic section at the International Congress of Medicine in London. Contending interests were rendering the committee's task of selecting an opener for the first discussion difficult, when the suggestion that Little should open on Little's disease settled at once both opener and subject. In the same year he was elected the first president of the subsection of orthopædic surgery of the Royal Society of Medicine and remained in that office until 1919. He was also chosen to preside over the newly formed British Orthopædic Association.

In a wider circle Little came to exercise increasing influence. His judgment was sound, his knowledge of the literature of orthopædic surgery was encyclopædic, his writings were compounded of erudition and scholarship. Many of them were published in our own columns, the subjects including scoliosis, spina bifida, coxa vara, Pott's disease, and absence of the patella. That he might have been a historian is evident from the admirable History of the British Medical Association, 1832–1932, first published as a series of articles in the British Medical Journal and then reprinted in book form with portraits and pictures. He had no enemies and excited no professional jealousy. Mr. Laming Evans writes: "Muirhead Little was of striking appearance and his good looks remained with him throughout his old age. He might easily have been mistaken for a bishop or a judge. Of abstemious habits, he went out to dine only for the sake of congenial companionship. His entertainments in Seymour-street were simple and kindly, enjoyed by his guests for the brilliance of his conversation. He was not keen on games, but enjoyed a country walk. He was a frequent attender at the Casual Club, and more than once read a paper there. To all with whom he came in contact he endeared himself; house surgeons respected him, nurses obeyed him with alacrity, and he was adored by his patients, of whose case histories he was tolerant almost to indulgence. His religious views were broadminded and sincere, and he carried them into his daily life."

Mr. Muirhead Little married in 1890 Mary, only daughter of John Burgess Knight, and is survived by his widow, one daughter, and three sons.

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DR. GEORGE BRYCE, who died at Torquay on Oct. 3rd in his 75th year, was living in retirement after a life spent in general practice. Born in the village of Whitburn, near Bathgate, Linlithgowshire, he received his medical training at St. Mungo's College, Glasgow, where he won many medals and qualified in 1895. He then settled in the Lozells district of Birmingham where he developed a large general practice, publishing a number of interesting cases in the Midland Medical Journal. In 1911 he took the M.D. degree for practitioners at Durham University. But this was only one side of Dr. Bryce's activities. He joined the Royal Geographical Society and was an ardent supporter of the Peary Arctic Club, publishing in 1911 a historical survey entitled "The Siege and Conquest of the North Pole." After retirement he was able to indulge his love of travel, and in 1931 went up the Amazon with Mr. James L. Palmer, editor of the Western Morning News in search of rare butterflies and plants. To the herbarium at Kew Gardens he presented specimens of rare Arctic plants that he had gathered in Spitzbergen, and he made an extensive study of the insect life of Labrador.

Of his three children two qualified in medicine at Birmingham: his son is carrying on the Lozells practice, a daughter is in partnership at Torquay.

WILLIAM CARR HUMPHREYS, M.R.C.S. Eng., was a well-known figure in Swansea, where he died after a fall which broke a leg. He was in his 79th year, and had lived for 50 years in a house at the corner of Cradock-street and Northampton-place. Born in Oswestry, he was educated at Bromsgrove School and Queen's College, Birmingham, where he qualified in 1881. His connexion with Swansea began with residence at the General Hospital to which later he became out-patient medical officer. He was before everything the family doctor, always efficient and always at hand when wanted. Throughout life he retained his love of the open air and was often to be seen bathing from the sands or working in his allotment on Town Hill. His personal expenses being small—he never married—he endeared himself by countless acts of generosity. His rounds he did in a horse-drawn brougham.

# CORRESPONDENCE

## AN APPEAL TO MEDICAL BENEVOLENCE

*To the Editor of* THE LANCET

SIR,—A part of the work of the Royal Medical Benevolent Fund which has won the very special sympathy and support of many of your readers in previous years is the distribution of Christmas gifts. Undoubtedly it is due to the fact that this particular appeal touches the heart and kindly feelings of all as it comes at the season of good fellowship. Once again I venture to make my appeal in your columns for donations, either large or small, in order that the Fund may continue the distribution of 30*s.* each to all beneficiaries.

I cannot but feel impressed when I read the many letters of thanks which are received from the recipients after Christmas Day. Clearly these letters are written from homes where no luxuries exist, and where the greatest economy has to be studied; often from cheap lodgings or single bed-sitting-rooms where lonely ones rejoice in the fact that they have not been forgotten. But all the letters contain expressions of gratitude and thanks to those who have made the gift possible.

I do not wish to stress unduly the needs and difficulties of our less fortunate medical brethren or of those who were once near and dear to them. But I do desire to assure your readers of the great work the Benevolent Fund is doing in bringing some happiness and comfort into the lives of many. This kindly work is being carried on thanks to the generous support which the committee has received, but it can only be continued and increased if we still receive the support and sympathy of our professional colleagues.

Donations should be sent, and cheques made payable, to the hon. treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, London, W.1, who will gratefully acknowledge them.

I am, Sir, yours faithfully,

THOS. BARLOW,

**Sept. 12th.** **President of the Royal Medical Benevolent Fund.**

## IMMUNISATION AGAINST SCARLET FEVER

*To the Editor of* THE LANCET

SIR,—Your leading article last week under this heading omits mention of one of the chief difficulties of the problem. I refer to the fact that scarlet fever is not really a disease at all. The term was applied to a group of symptoms before their cause was understood. Now we know that "the rash" of scarlet fever is caused by the exotoxin of certain hæmolytic streptococci in persons devoid of antitoxin. The hæmolytic streptococci will cause tonsillitis without the rash in persons possessing the antitoxin. This tonsillitis is just as likely to be followed by complications in those who do not get the rash as in those who do, and is highly infectious. By immunisation an entirely false sense of security is obtained. The immunised no longer get the rash but they are just as liable to get recurrent tonsillitis. However, tonsillitis without a rash is not "officially" scarlet fever, and no particular attention is paid to it or isolation of the infected person insisted upon.

The following example illustrates this point:

In a certain children's hospital, where the nurses had been immunised against scarlet fever for some years, an epidemic of tonsillitis occurred in a ward. Some seven children were involved, two of whom got a scarlatiniform rash. The cause of the trouble was found to be the staff nurse who had a "sore-throat." The organism obtained from the throats of all the children was identical—i.e., a hæmolytic streptococcus which produced a fairly strong exotoxin on culture. The two children with the rash were said to have "scarlet fever"; the others and the nurse "tonsillitis." The children with the rash were sent to a fever hospital; the others were not.

On it being suggested to the matron that the staff nurse had scarlet fever "in her throat" the former became angry and pointed out with some vigour that all her nurses had been immunised against scarlet fever and were known to be immune, adding that if every nurse with a "hospital throat" was to be treated as if she had scarlet fever she (the matron) would not have any nurses left.

Space does not permit me here to enlarge any further on this curiously anomalous position, but it is

clear that before immunisation of school-children is generally recommended a more scientific understanding of the problem by the profession is needed.

I am, Sir, yours faithfully,

Dublin, Oct. 7th. W. R. F. COLLIS.

## MEDICAL ASSESSORS

*To the Editor of* THE LANCET

SIR,—Your important leading article upon this subject makes plain the fact that the laws of England empower judges of the High Court to call medical assessors if they think fit. The question in the last paragraph of your article is, for the time being, a sufficient commentary upon the rarity with which they take advantage of the power placed in their hands. Your article touches the fringe only of most complicated legal, medical, social, and religious questions. Turning to one side only, eminent legal authorities fully realise that the legal position with regard to responsibility for crime urgently needs a complete overhauling. England at present is doing nothing to prevent the increase of mentally deficient members of the population. Take one aspect. There can be no doubt that mental deficients are constantly being sent to prison, some more than once. No counsel will put forward a plea of insanity on a trifling charge involving six months' imprisonment. In these cases the plea of insanity not having been raised, the presence of a medical assessor would be useless. If the mentally deficient prisoner be found guilty, or not guilty, the person is subsequently liberated to continue a career of crime and legitimately, or frequently illegitimately, increases the number of mentally deficients in this country.

Let it be supposed that a judge accepts the presence of a medical assessor, would he be able to examine the prisoner, consider the past record and family history, before giving his opinion? Answers to these questions are essential in order to form that opinion. I have recently seen the record of a mentally deficient who has been twice imprisoned, but is now fortunately in an institution where, let us hope for the sake of the community, he will remain.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 7th. G. LENTHAL CHEATLE.

## ASCARIS INFECTION

*To the Editor of* THE LANCET

SIR,—In THE LANCET of August 10th last there is an annotation on ascaris infection; in this a passage from our editorial of last June on the same subject is described as a suggestion for the ". . . deliberate fouling of the usual drink of hundreds of millions. . . ." Such a strong expression is scarcely excusable on any grounds, and we feel sure it must have escaped your personal notice; it could only emanate from someone who has been out of personal contact with tropical conditions for many years and who has not kept himself au fait with recent advances in tropical sanitation.

Our experiences in numerous discussions with those who have installed or are proposing to install these latrines has been that the question of the proximity to wells and of the possibility of fouling these is always most carefully considered as a matter of course. In an article which was not a complete discussion on bore-hole latrines in all their aspects but one written to draw the attention of sanitarians in India, and in Assam in particular, to a form of latrine that has been thoroughly "tried out" and been found of great value in other tropical countries, it was not considered necessary to reiterate fundamental principles of sanitation.

In a comprehensive scientific discussion on bore-hole latrines, the question of well pollution, about which there is already a certain amount of experimental data available, would have to be given full consideration.

I am, Sir, yours faithfully,

L. EVERARD NAPIER,
Editor, *Indian Medical Gazette*.

School of Tropical Medicine, Calcutta, Sept. 19th.

*** Bore-hole latrines are designed to carry infective material into the ground water, and if this polluted water should reach drinking-water wells the fouling of the drinking water is not accidental but the result of deliberate action. This was the sense in which the words "deliberate fouling" were used in our annotation. The question is whether the migration of pathogenic bacteria does actually take place from latrine to well. C. H. Yeager, one of the pioneers of this type of latrine, working at Singapore for the Rockefeller Foundation, showed that the colon bacillus was carried in the subsoil water 70 feet in 19 days irrespective of the direction of its flow, and American observers have traced still more extensive migration. But in his latest publication which has just reached us Yeager remarks that bore-hole latrines are "very much safer than we believed before the bacteriologic work during the past two years was completed." If this experimental work, which has not yet been published, should justify the proximity of latrines to wells, believed from actual experience to be free from risk, the bore-hole latrine would be gladly accepted by sanitarians the world over.—ED. L.

## "A CURIOUS EPIDEMIC OF SORE-THROAT"

*To the Editor of* THE LANCET

SIR,—The account in your issue of Sept. 28th (p. 740) of an epidemic of sore-throat at a Northants village reminds me of a rather similar outbreak which occurred at the Midland Counties Asylum at Knowle, near Birmingham, in April, 1908, reported in your columns at the time (THE LANCET, 1908, ii., 1814). In this outbreak a nurse first complained of pharyngitis and tonsillitis which rapidly spread to other nurses on the female side, then to the male nurses and to a number of the male inmates. The throat infection was at first thought to be Klebs-Löffler, but diphtheria bacilli could not be found in the swabs although diphtheroid bacilli were present and there was plentiful growth of both streptococci and staphylococci. When this epidemic abated a similar but more severe one occurred in my practice at a private proprietary school where the boys fell down like ninepins, the whole class going sick one by one, all with similar symptoms and local signs. One boy died of cardiac failure fourteen days after onset of symptoms. His was the only throat with Klebs-Löffler bacilli; all the others showed Hofmann's diplococci and streptococci, but no diphtheria bacilli, except in one case in which the local throat signs were slight. During the epidemic the masters and servants in the school had slight pharyngitis with no constitutional disturbance. At the same time as this occurrence an epidemic of diphtheria prevailed in the neighbouring parishes.

I am, Sir, yours faithfully,

Rowington, Warwick, Oct. 5th. J. O. HOLLICK.

## ORIGIN OF BOILS

*To the Editor of* THE LANCET

SIR,—It would be interesting if dermatologists would give opinions in your columns regarding the ætiology of boils on the neck. Do they consider that the failure on the part of most hairdressers to sterilise their clippers, scissors, and combs may be a contributory cause? If so, do they consider that the immersion of instruments in surgical spirit would be of value? Opinions on the sterilisation of brushes would also be useful. The neck clipper, when dissected, reveals an astonishing collection of hair, and I believe that organisms may easily be conveyed from one customer to slight abrasions on the neck of another. In view of the frequency of the condition it seems desirable that the matter should be ventilated. Infection, sometimes severe, of the eyebrows certainly follows plucking, and I think furuncle of the nostrils often arises from the same cause. It may therefore be that occasional epilation by blunt clippers allows access to organisms already present, and the idea that the clipper itself conveys infection may be quite wrong. It seems, however, well worth while to discuss the matter in the hope that hairdressers will, if necessary, coöperate in any measures that the dermatologists consider desirable.

I am, Sir, yours faithfully,

Beeston, Notts, Oct. 7th. L. P. LOCKHART.

## EVIPAN SODIUM WITH PREMEDICATION

*To the Editor of* THE LANCET

SIR,—The value of Evipan Sodium as a general anæsthetic was so ably put forward by Mr. Dickson Wright in your issue of May 4th that I was persuaded to give this barbiturate an extended trial. The following points, arising out of its use in 125 cases during the last few months, may be of interest to some of your readers.

Having to treat a large number of cases of abortion sent into St. Giles Hospital, we decided to use evipan anæsthesia for those whose symptoms demanded surgical intervention. At first it was found that the patients came into the operating theatre apprehensive and excited, and several of them appeared to be very resistant to the drug. Preliminary medication was indicated, and cautiously adopted, and it was found that if it was given at least ***one hour*** before operation, and if the evipan sodium solution was injected into the vein slowly and by stages, then a uniform and uneventful anæsthesia was obtained. As a routine dose (of course subject to modification to suit special needs) omnopon gr. 1/3 with hyoscine hydrobromide gr. 1/150 has been given to our last 120 cases 1–1½ hours before operation. We have strictly adhered to this time interval between premedication and the exhibition of the barbiturate, and to the following technique when injecting the latter. The uniform success of the practice has inspired our confidence.

After premedication the action of the evipan given intravenously is so consistent that we have become accustomed to regard its dosage as almost uniform in its effect upon the patients. An ampoule of the substance contains one gramme (grs. 15) and this must be completely dissolved in the 10 c.cm. of sterile distilled water from an ampoule which is also provided by the makers. From 2·0 to 2·5 c.cm. of the solution is *slowly* injected into a suitable vein in front of the forearm (we take about fifteen seconds to do this) and the patient is carefully observed. No attempt is made to get her to count herself out, but a few words of encouragement are spoken to enlist the aid of "suggestion," so valuable in the induction stage of any general anæsthetic.

This initial dose of say 2·5 c.cm. in fifteen seconds is almost always sufficient to produce unconsciousness. The action of the drug can be clearly seen in the rather sudden relaxation of all muscles. As soon as the initial loss of consciousness occurs the injection is stopped, and it will usually be noticed that there is a transient cessation of respiration. It seems proper to await passively the natural return of the normal respiratory rhythm before giving any further injection. In our series this has always occurred after twenty or thirty seconds.

The return of a normal respiratory rhythm is the indication for the injection of a second 2·0–2·5 c.cm. of the solution, which is given as slowly as the first. A careful watch is kept on the patient during this second phase, and again the respiratory rhythm is seen to fade away. This time a longer interval is allowed to elapse and the return of good respiratory movement awaited passively. A period of about sixty seconds for this second interval has proved quite satisfactory before the final dose of another 2·0–2·5 c.cm. is given, and this is injected as slowly as before. Thus about two minutes are allowed in which to inject 7·0–7·5 c.cm. of the solution.

After the final dose the patient is in a deep sleep; yet we have found that the course of the anæsthesia runs more smoothly if she is left undisturbed for at least another minute. Nothing should be allowed to disturb her during the induction stage, unless an attempt to hasten the return of respiratory movements by pressure on the chest-wall is indicated; nor should too hurried a start be made with the operation. We have found that, as with an inhalation anæsthesia, a smooth passage into unconsciousness, and a little time allowed for the body to become accustomed to the altered conditions, ensures very much more satisfactory results.

In this series of cases which have received premedication the action of the evipan has been so uniform that we have found that 2·0–2·5 c.cm. (grs. 3½) may be confidently expected to induce sleep, and that our total dose for a general anæsthesia lasting some fifteen or twenty minutes has averaged 7·5 c.cm. (grs. 10). It has been found easier to control the dosage when the solution is injected in three stages and in approximately equal proportions, as has been described.

Observations have been made upon the blood pressure of some of our patients during the course of this anæsthetic. A Baumann's sphygmomanometer was used in place of the usual tourniquet, and it was seen that there was a transient fall of 15–20 mm. Hg in the initial stages of the induction, rarely more. The pulse-rate rises slightly, as expected with the small fall of blood pressure, and then remains very steady, and a "good pulse" throughout the operation is usual. We have learned to pay most attention to the patient's respiration, and have been guided by this both for the rate of injecting the solution, the amount to be given, and the duration of the interval between each part of the dose. It has not been found necessary to disturb the patient by inserting an airway.

If it is desired to counter too large a dose, or if for any reason it should become necessary to hasten the recovery of consciousness at any stage, Coramine has been used. The contents of two ampoules (3 c.cm.) are injected intravenously. Almost immediately the patient's respiratory movements

quicken and become deeper; then there are vague movements of the limbs and head, the pulse quickens, and more colour is diffused into the face. It is stated that 10 c.cm. of coramine may be given, but we have never required more than 5 c.cm. After the initial stimulation passes off, the patient usually continues to sleep on quietly, but can be roused by any vigorous action of an attendant.

If left alone after operation a patient usually sleeps on peacefully for a couple of hours; the exact time seems to depend upon her individual need for sleep. She awakes refreshed, without any feelings of nausea, and has none of the distressing symptoms so often associated with recovery from an inhalation anæsthetic.

The conclusions reached so far are: (1) that the barbiturate derivative sodium evipan is a rapid and pleasant general anæsthetic for surgical operations of short duration, and that it is notably free from any unpleasant after-effects; (2) that in a series of 120 cases premedication has greatly facilitated the action of this drug; (3) that the premedication we have used, without any alarming or unexpected symptoms in any case, has no marked contra-indications; (4) that the clue to its successful use is a very careful observation of the patient's respiration; (5) that in order to guard against any real depression of the respiratory centre a sufficiently long interval of time must be allowed to elapse between the administration of the preliminary medication and the administration of the sodium evipan. It has been found that *one hour* is the minimum interval and one and a half hours the optimum time that should be allowed to elapse after using the narcotic mentioned.

This series of cases is too small to justify final opinions, but thus far the method has given entirely satisfactory results.

I am, Sir, yours faithfully,

R. W. NICHOL,
Oct. 8th. Assistant Medical Officer, St. Giles Hospital, Camberwell.

# PUBLIC HEALTH

## THE NEW HOUSING ACT

AT a meeting of the Royal Sanitary Institute last Tuesday Lord BALFOUR of BURLEIGH presided, and Dr. JAMES FENTON read a paper on the Housing Act, 1935.

The housing problem, Dr. Fenton said, was one for which no Government had so far found a satisfactory solution, and many would think that further legislation would soon be needed, although the new Act brought many improvements. Its most outstanding feature was perhaps the establishment of a national standard of overcrowding. A house was now overcrowded when it was necessary for any two persons over ten years of age and of opposite sex (excluding spouses) to sleep in one room; or alternatively when it was inhabited by more than the permitted number of persons as set out in a schedule of the Act. The permitted number was calculated from two tables based on the floor area and on the number of rooms. A child under one year did not count, and a child between one and ten was half a unit. A room with floor area of less than 50 square feet was excluded. Dr. Fenton described the application of this standard to his own district of North Kensington, where previously a standard of 400 cubic feet of air for adults and 200 cubic feet for a child under ten had been applied to old areas, but 450 cubic feet had been required in improvement areas for every person, regardless of age. This was higher than the standard anywhere else in the country, but not as high as that of the new Act. In a typical street of an improvement area in North Kensington there were 145 houses of the terrace type, each with eight good-sized rooms and a small slip-room. These were let out to 3, 5, or more working-class families. In 1932 these houses had held 625 families (2386 people), an average of just over 16 people per house. Over 80 per cent. of the rooms had been used both for living and sleeping, and on the lower of the two cubic feet standards only 21 of the families had been overcrowded. In 6 families the overcrowding could have been remedied by adjusting the sleeping arrangements, and the displacement of only 19 persons would have abated it in the remainder. When the standard of 450 cubic feet per person has been applied in 1934 it had been found that 103 families, consisting of 643 persons, were overcrowded. When the standard of the new Act was introduced, after rigid application of the old standard had eliminated overcrowding, it was found that 68 families, consisting of 368 persons, were living in conditions now regarded as overcrowded. Nevertheless the standard of the new Act was not too high for a built-up area. It was apt to be severe on houses with large rooms, but would permit a theoretical density of 330 persons per acre in the street he had in mind. The provision that a baby did not count gave the family a year's notice before they had to move into larger premises. A survey of North Kensington had shown that there were some 2000 or 3000 families living in overcrowded conditions, out of a total of 20,134, although the bye-law standards had been rigidly enforced.

There had been no serious obstacles to the completion of the survey. The first survey might be described as a "door step" survey, for the enumerator only had to ascertain the number of rooms and need not enter the house, though he usually did so. He probably knew the number of rooms in the house before he knocked at the door, and one or two questions and the use of his eyes would show him whether that particular house was different from similar ones already familiar to him. He then had to obtain from some intelligent occupant the number of families and individuals and their ages and distribution in the rooms. He could visit approximately 50 houses in the day, with perhaps 15 failures to obtain the required information. In Kensington it had been found that one man could get the necessary information in 250 houses in one week with a population of 2500. One clerk could cope with the forms brought in by six enumerators. The second survey was a much more detailed affair as it required information of the size of the rooms. It was quite unsafe to assume that all houses in a terrace had rooms of the same size. One worker would not be able to cover more than 50 houses a week, and sometimes five or six visits had to be paid. Again one clerk could deal with the material brought in by six survey assistants.

The duty of local authorities to enforce the overcrowding provisions fell into two parts: prevention and abatement of overcrowding arising after and existing on the appointed day. The provisions of the Act relating to the first part were definite and not difficult to enforce. The landlord must take

reasonable steps, when letting, to ensure that the number would not be excessive, and must notify the local authority within seven days if he subsequently became aware of overcrowding. The occupier could then be served with a notice requiring abatement without offering alternative accommodation. If the occupier or a member of his family persisted in the offence, the local authority could apply to a magistrate for vacant possession, expenses being recovered from the landlord. This was an innovation. The problem of existing overcrowding was a little more difficult. An occupier was not guilty of an offence unless he was offered suitable alternative accommodation: adequate housing, near his work, with security of tenure, at a rate within his means.

Mr. J. S. WHEELER (Housing Inspector, Kensington) reminded his audience that the rooms vacated by one family might bring relief to a smaller family. The officers of bodies concerned in Kensington were notified several weeks in advance of rooms which would become vacant and had frequently been able to approach owners and urge them to let rooms to families known to be living under unsatisfactory conditions. New accommodation of 74 flats had enabled the authorities to abate overcrowding in 144 families of 1001 persons. An important innovation in the new Act was the introduction of redevelopment procedure. An area suitable for redevelopment was one containing at least 50 working-class houses of which one-third were overcrowded, unfit for human habitation, not repairable at reasonable cost, or congested in arrangement. Redevelopment in a large city like London would, Mr. Wheeler thought, prove extremely difficult. The cost would be great and the number rehoused might not justify it. Moreover, the Exchequer grant was less generous than that of the 1930 Act. The new Act provided that houses which were only dangerous to health because of bad arrangement were paid for at market value instead of site value if they stood in a clearance area. If the local authority made a clearance order requiring the owner to demolish, they must themselves purchase and demolish such houses. A mixed house—i.e., one only partly used for habitation—might be included in a clearance order if any part used for dwelling was unfit by reason of disrepair or sanitary defects. Very few houses would prove to be dangerous solely by reason of bad arrangement; they generally had sanitary or repair defects. The increased cost to local authorities arising out of the amendment which prescribed market-value compensation for such buildings, was not therefore likely to be great. If the Minister was satisfied that a house had been well maintained, although rightly included in a clearance or compulsory purchase order, he might direct the local authority to pay compensation over and above site value. An amendment of special interest to health officers was that the local authority must give an objecting owner their reasons for declaring his house unfit at least 14 days before the public inquiry. In Kensington the evidence of the medical officer and sanitary inspectors was prepared well in advance, and anybody could see it. Cross-examination would be shortened and the case strengthened by putting in advance copies of the evidence. Another new provision allowed a local authority to enforce closure of any part of a house, whether let separately or not and even if not occupied. Any unfit underground room could be closed.

In answer to questions, Dr. FENTON said that in the Kensington survey no differentiation had been made between working-class houses and any other type; the survey had been directed to congestion irrespective of social distinctions. Neither landlord nor tenant had been notified of the survey, but less than a dozen objections had been encountered. The information given by a responsible head of a family was reliable in the great majority of cases. The service of notices would take as much time and money as house-to-house visitation, and was far less satisfactory as it always required verification by visit in the end. The standard of overcrowding was the potential accommodation available to any one family, even if in fact they all chose to sleep in one room.

## School Medicine in the Future

MANY school medical officers were moved by the jubilee of their service to review its progress and achievements, and the widening of its scope; some of them gave their views about what is still to be hoped for. No one has made such incisive comment or advocated such radical alteration as Dr. Henry Herd (Manchester), who has expressed in clear and outspoken language thoughts that have been floating in many minds. The present statistical table prescribed by the Board of Education does not, he thinks, give a true picture of the health of schoolchildren and it encourages too intense a concentration on the discovery of defects and diseases. School doctors, in common with others, have learnt that "there is a time to speak and a time to keep silence in the case of enlarged tonsils," but the policy might be extended to other conditions such as certain varieties of heart disease. His main criticisms of the present system are these: (1) lack of opportunity for continuous study of the individual child; (2) the static character of the present investigation. All we are getting now is merely three cross-sections of the child's condition at four-year intervals; of what goes on between the routine examinations nothing is known. Dr. Herd insists on the need for periodical supervision at shorter intervals; better still would be a continuous record from infancy. As an example he cites the record of nutrition and he approves the scheme of the London County Council whereby a continuous record of height and weight is made from measurements taken twice a year. A record of this kind is facilitated by a card designed by Dr. E. D. Irvine (Blackburn), starting from the infant welfare period and going on through school life, which he hopes may be of value to medical officers of juvenile instruction centres, factory medical officers, and even to panel practitioners. Dr. Herd points out that the emotional reactions of children to their surroundings are fundamental even for their physical growth and development. The school service should study the psychological problems which at present are relegated to child guidance clinics; this would necessitate child psychiatry being part of the equipment of every school medical officer.

Dr. Herd's second point is that it is not enough to adjudge a child healthy because it shows no abnormality when at rest under examination. There should be study, by careful observation of the child's work and play, of how the whole organism is functioning. As it is children are now often brought forward as special cases by observant teachers. Tests of physiological fitness, as Dr. H. E. Magee has pointed out (THE LANCET, 1935, i., 268), have still to be put in practice, for scientific evidence of functional derangement before organic change sets

in would make prevention possible in the true sense. Two of the tests mentioned by Dr. Herd are the subject of report during 1934: the use of the dynamometer by Dr. A. T. Powell (Walthamstow), and the estimation of hæmoglobin by Dr. S. F. Reynolds (Manchester); while the respiratory test has been studied in previous years by Dr. J. V. A. Simpson (Torquay) and Dr. J. G. Woolham (Manchester).

Dr. Herd's final point is that instruction in hygiene should be given by the school doctor. It is, he says, altogether anomalous that the officer who has to deal with defects arising from faulty hygiene should take no part in teaching how to prevent them. Here he is in agreement with the London County Council scheme for medical care of those over 14 years of age, which lays down that the medical officer inspecting the adolescents should be himself the lecturer in hygiene.

### A Doubtful Case of Typhus Fever

The last weekly return contained the notification of a case of typhus fever from the Port of London. Dr. C. F. White, medical officer of health for the port, informs us there is an element of doubt about the diagnosis. The circumstances were these:

A male Chinese, aged 41, embarked as a steerage passenger at Hong-Kong on August 14th. He was last ashore at Penang on August 23rd. On Sept. 4th he had a slight febrile attack but his temperature returned to normal the next day. On Sept. 11th he had a shivering attack, complained of headache and backache and took to his bed. The ship's surgeon found his temperature to be 103° F. On Sept. 14th he developed a macular eruption, profuse on the abdomen, chest, and back, but sparse on the arms and legs. This rash became petechial and was confluent in the groins and axillæ. The patient was dull and stupid and the ship's surgeon diagnosed typhus fever.

On arrival in the Port of London on Sept. 18th the boarding medical officer found the man with a temperature of 103° F., pulse 130, respirations 30. His face was somewhat bloated, the conjunctivæ injected, the tongue dry and brown, and there were sordes on the lips. He was dull and apathetic, and it was difficult to attract his attention. There was a coarse macular and petechial eruption as described. There was bronchial congestion at the base of the right lung. No pediculi corporis or capitis were found but pediculi pubis were in evidence.

The patient and his wife were removed in the ambulance launch to the port sanitary hospital, being deloused before admission to the cubicle ward. The Chinese crew were also taken ashore and deloused; meanwhile their quarters and the ship's hospital were fumigated with sulphur dioxide. The passengers and white crew were medically examined and all were found well. In hospital the rash faded and the temperature fell to normal on the twelfth day from the onset. There was no enlargement of the spleen, slight albuminuria and obstinate constipation.

Samples of blood were sent to two bacteriologists, both of whom reported the Weil-Felix reaction negative, but the Widal strongly positive (1 in 640 for *B. typhosus*).

Although bacteriologically the case was considered to be typhoid, clinically the eruption, the history, and the general appearance of the patient were characteristic of typhus fever.

## INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 28TH, 1935

*Notifications.*—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2289; diphtheria, 1128; enteric fever, 68; acute pneumonia (primary or influenzal), 520; puerperal fever, 37; puerperal pyrexia, 85; cerebro-spinal fever, 10; acute poliomyelitis, 20; encephalitis lethargica, 6; dysentery, 34; ophthalmia neonatorum, 86. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the infectious hospitals of the London County Council on Oct. 4th was 2743, which included: Scarlet fever, 926; diphtheria, 1028; measles, 23; whooping-cough, 321; puerperal fever, 18 mothers (plus 12 babies); encephalitis lethargica, 269; poliomyelitis, 16. At St. Margaret's Hospital there were 17 babies (plus 6 mothers) with ophthalmia neonatorum.

*Deaths.*—In 121 great towns, including London, there was no death from small-pox or enteric fever, 7 (0) from measles, 1 (0) from scarlet fever, 18 (6) from whooping-cough, 20 (6) from diphtheria, 69 (15) from diarrhœa and enteritis under two years, and 18 (2) from influenza. The figures in parentheses are those for London itself.

Deaths from diarrhœa and enteritis were distributed over 27 great towns, the highest being Liverpool 12, Leeds 7, Sunderland and Birmingham each 5, no other great town more than 2.

The number of stillbirths notified during the week was 272 (corresponding to a rate of 43 per 1000 total births), including 45 in London.

# MEDICAL NEWS

### University of Cambridge

At recent examinations the following candidates were successful:—

D.M.R.E.

*Part II.*—Hans Jungmann, D. W. Lindsay, D. F. MacDonald, J. W. McLaren, Alfred Pollitt, N. C. Sinha, I. G. Williams, and C. W. B. Woodham.

### University of London

Three lectures on the comparative histophysiology of the vertebrate nephron will be given at University College, Gower-street, W.C., by Dr. Pol Gerard, professor of histology in the University of Brussels, on Oct. 22nd, 24th, and 25th at 5.30 P.M. Admission without ticket.

### University of Liverpool

At recent examinations J. B. Mackie, H. E. C. Sutton, and Patricia I. Unsworth were successful in obtaining Part II. of the diploma in public health.

### British College of Obstetricians and Gynæcologists

The following have been awarded the diploma of the College (D.C.O.G.) after examination:—

P. N. Bardhan, Wilfrid Bradley, J. O. F. Davies, E. G. Frewer, S. M. Green, B. P. Harris, A. M. Hunter, W. M. Martin, N. H. Merchant, R. A. Nash, P. W. Rice, S. H. Swift, H. T. Tate, Devibai Valiram, J. A. Walker, J. W. Walker, and B. E. Wurm.

### Medico-Legal Society

The first meeting of the session will be held at Manson House, 26, Portland-place, London, W., at 8.30 P.M. on Thursday, Oct. 24th, when Mr. C. A. Mitchell, D.Sc., will deliver a presidential address on forensic medicine in relation to medicine. Manson House, the headquarters of the Royal Society of Tropical Medicine and Hygiene, will be the Medico-Legal Society's meeting-place for the future. The annual dinner is to be at the Holborn Restaurant on Friday, Dec. 13th. The hon. secretaries are Mr. Ernest Goddard (3, South-square, Gray's Inn, W.C.1) and Dr. W. G. Barnard.

### Industrial Welfare Society

At 5.30 P.M. on Tuesday next, at 14, Hobart-place, London, S.W., Dr. S. W. Fisher, H.M. medical inspector of mines, will give an address on the medical aspects of a miner's life to the advisory medical committee of this society. Dr. D. A. Coles, who is retiring from the chairmanship of the committee, is being entertained at dinner at the Goring Hotel, Ebury-street, S.W., at 7.45 P.M. on the same day.

### Post-graduate Course on Tuberculosis

From Nov. 4th to 9th a post-graduate course will be given, under the auspices of the Joint Tuberculosis Council, by the medical and surgical staff of the Brompton Hospital for Consumption and Diseases of the Chest, London. There will be two lectures each morning and each afternoon (except Saturday), and the meetings will be held at the hospital. Further particulars may be had from Dr. William Brand, 8, Christchurch-place, Epsom, Surrey.

## HOSPITAL DINNERS

### Charing Cross Hospital

The annual dinner of past and present students of Charing Cross Hospital medical school was held at the Café Royal on Oct. 5th. In the absence of Dr. A. W. Oxford, who was prevented by ill-health from taking the chair, Mr. Norman C. Lake presided, and pointed out the difficulties of understudying one who was doctor of medicine, doctor of divinity, Greek scholar, antiquarian, and philatelist. A message of sympathy was sent to Dr. Oxford. In proposing the toast of the hospital and the medical school Mr. Lake spoke of the hope, once entertained, of turning the old nurses' home into a block of private wards. The nurses were now safely housed in their new quarters at Haverstock Hill, but the architectural disadvantages of the old home could not be overcome without rebuilding. The Charing Cross tradition, linked with memories of Huxley and Livingstone, did not depend upon bricks and mortar, and he felt that the hospital would be subserving the interests of science best if it were rebuilt. This was the centenary year of the medical school, which was now more prosperous than it had ever been. Mr. C. J. Marshall, presuming on a friendship which had, on Mr. Lake's admission, "withstood the co-authorship of a text-book," gave some happy reminiscences of the chairman, and Mr. Eric A. Crook, the dean, spoke of the proposal to bring back the teaching of anatomy and physiology to the medical school. He also referred to the great loss to the hospital during the past year in the deaths of Dr. W. J. Adie and Dr. W. Howard Jones. Dr. Gordon M. Holmes proposed the toast of the visitors, coupling it with the names of Prof. D. M. Blair and Mr. R. T. D. Stoneham. Mr. Herbert J. Collings baffled the company agreeably with conjuring tricks, and recounted the story of the consultant who undertook to examine a patient for fifty guineas. "Do!" said the patient, "and if you find them you can have half."

### St. Thomas's Hospital

The old students' dinner was held at the Dorchester Hotel on Oct. 4th, when Sir Cuthbert Wallace presided over a gathering of nearly two hundred. The chairman having remarked that they were there to learn something about the hospital and the school, Sir Arthur Stanley said that as far as the hospital was concerned things were going on well. The reconstruction of the out-patient department was now complete, and "something that will do for a medical school" (even if not up to the dean's expectation) was going up at a cost of about £70,000, none of which would fall on hospital funds. Six of the eight wards had been remodelled and the amenities of College House had been improved, especially by the addition of a veranda. Lady Riddell's gift had made it possible to rebuild the nurses' home, complete with swimming bath. That released accommodation in the paying block, a matter in which St. Thomas's had led the way and should not be dropping behind. Sir Arthur ended with an appeal to his hearers not to let people think St. Thomas's was rich, but to take every opportunity of denying such an impression, for the hospital needed £20,000–£30,000 a year to keep it going, and £100,000 now for capital expenditure. Prof. L. S. Dudgeon, who replied for the school, joined with Sir Arthur Stanley in congratulating the chairman on having obtained the highest post in the surgical profession. He besought him during his term of office to make some effort at coöperation between the College and the medical schools. He spoke with regret of the retirement of Mr. Nitch with whom he had entered the school. He recorded sundry honours to St. Thomas's men, including the translation of Prof. LeGros Clark to the chair of anatomy at Oxford, and mentioned the addition to the dissecting-room of an X ray department for anatomical study of the live body. He set out the good athletic record of the year and concluded with a tribute to the scheme for coöperation with the medical schools of St. Bart.'s and Guy's. Prof. T. B. Johnstone, dean of Guy's, who responded to the toast of The Guests, said he entered gladly into the entente cordiale, the aim being to give students of the three schools something they had not had before, but he reminded his hearers that after the separation of St. Thomas's and Guy's in 1825 there had been a united hospitals dining club of which he gave some entertaining details. Dr. A. E. Russell proposed the health of The Chairman, to which Sir Cuthbert Wallace replied by remarking: "If you get out of St. Thomas's Hospital what I have got of joy and happiness you will be very lucky." The formal proceedings closed at the early hour of 10 to allow conversation and social intercourse.

### King's College Hospital

The annual dinner of past and present students of King's College Hospital was held on Oct. 5th, at the May Fair Hotel, with Sir Charlton Briscoe in the chair. Dr. G. F. Still, consulting physician and professor emeritus for diseases of children, was presented by the chairman with a book containing the names of subscribers to the fund which was collected for his portrait exhibited in this year's Academy. Thanks to the generosity of the artist, Mr. Gerald Kelly, the proceeds for the fund are to be devoted to an endowment of a cot in the children's ward. Sir Charlton Briscoe spoke of the great loss sustained in the resignation of the Duke of Connaught from the presidency of the hospital, and expressed his pleasure that the Duke of York had consented to succeed him as president. Dr. J. A. Drake, the dean, announced that the medical school was more flourishing than it had ever been, and reported the opening of a new biochemical laboratory. He made a special reference to Dr. Willoughby Lyle's book, "King's and Some King's Men," which contains, he said, a wealth of information about everything and everybody who has had anything to do with King's. Dr. Still returned thanks for the gift book presented to him, and Dr. R. H. Lee told entertaining stories of the time when the chairman was a student and house surgeon.

The Duke of York will preside for the first time as president of King's College Hospital at the festival dinner to be held at Claridge's on Thursday, Nov. 14th. He will announce the programme for the further development of the hospital.

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### Memorial to Miss Davies-Colley

A memorial is being raised to the late Eleanor Davies-Colley, M.D., F.R.C.S., and donations may be sent to the honorary treasurer, Miss Chadburn, at 16, Harley-street, W.1. The sum raised will be used mainly for the benefit of the South London Hospital.

### Chadwick Public Lectures

The autumn programme of the Chadwick Trust includes a lecture by Dr. Killick Millard on the Vaccination Question To-day, which will be given on Friday, Nov. 1st, at Manson House, 26, Portland-place, London. On Tuesday, Nov. 19th, at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C., Prof. R. C. McLean will speak on the bacteriology of the atmosphere. Both lectures will be at 5.30 P.M. Further particulars of the programme may be had from the secretary, Mrs. Aubrey Richardson, at the offices of the Trust, 204, Abbey House, S.W.1.

### Hampstead General and North-West London Hospital

The sixth winter session of post-graduate lectures at this hospital will open on Wednesday, Oct. 16th, at 3 P.M., when Mr. Herbert Naylor, physical director of the Y.M.C.A., will speak on health and exercise. Other lecturers will be: Dr. Saxby Willis, thoracic pain (Oct. 23rd); Mr. D. H. Patey, traction in the treatment of fractures and dislocations (Oct. 30th); Dr. H. V. Morlock, diagnosis and treatment of intrathoracic new growths (Nov. 6th); Mr. H. Lawson Whale, fads and fancies in laryngology (Nov. 13th); Dr. H. Courtney Gage, radiology of the genito-urinary tract (Nov. 20th); Dr. Adolphe Abrahams, insomnia and other disturbances of sleep (Nov. 27th); Mr. Peter Finigan, aims and methods of modern dentistry (Dec. 4th); Mr. S. A. Boyd, surgery of the biliary passages (Dec. 11th); and Mr. Arthur Gray, common difficulties in gynæcological diagnosis (Dec. 18th). All the lectures except the first will be at 4 P.M.

### British Postgraduate Medical School

Dr. W. B. Coley, of New York, will give an address on post-graduate teaching in America at the school (Ducane-road, Shepherd's Bush, W.) at 12.15 P.M. to-day, Friday, Oct. 11th.

### Lectures on Psychology for Nursing Sisters

The matron of Guy's Hospital has made arrangements for a course of 8 lectures on elementary psychology and methods of teaching, to be given to those members of her nursing staff, notably "sisters and other responsible persons," whose duties include the training of probationers. The course is being given by Miss Alice M. Jackson, B.A.

### London Hospital Medical College

Chronic pancreatitis has been selected as the subject for the Hutchinson triennial prize which will be awarded in 1938. The conditions of the prize may be obtained from the dean of the college.

### British Institute of Philosophy

The presidential address of this institute will be given by Sir Herbert Samuel, M.P., at University College, Gower-street, London, W.C., on Tuesday, Oct. 15th, at 8.15 P.M. He will speak on New Science and Old Philosophy. Application for tickets should be made to the director of studies at University Hall, 14, Gordon-square, W.C.1.

### Maternity Home for Southampton

On Oct. 3rd the Minister of Health, Sir Kingsley Wood, laid the foundation-stone of a maternity hom at the Borough Hospital, Southampton.

### Sussex Medical and Dental Golfing Society

The sixth autumn meeting of the society was held on Oct. 6th, on the links of the Brighton and Hove golf club. J. Scott Page won the Captain's trophy (3 up) and Gregg and Glover and Wallace and McAleenan tied with a score of 4 up in foursomes against bogey.

### Surgical Instrument Manufacturers' Association

The annual dinner of this association will take place at the Holborn Restaurant, London, W.C. (entrance in Newton-street), on Friday, Oct. 25th, at 7 P.M. The principal guest will be Prof. G. Grey Turner.

### British Orthopædic Association

The annual meeting of this association will be held in Manchester on Oct. 25th and 26th under the presidency of Mr. Harry Platt. The main subject for discussion will be fractures of the os calcis. Mr. B. L. McFarland and Mr. W. J. Eastwood will speak on its economic consequences; Dr. E. E. Myers, of Boston, U.S.A., will report the results of attempted reduction in a series of recent fractures; and Mr. R. Ollerenshaw and Mr. A. H. Todd will deal with the treatment of old fractures. A number of short papers will also be given.

### A Vocational Filter

An exhibition of scientific aids to management, arranged by the department of industrial coöperation of the British Association, is on view at British Industries House, Marble Arch, London. It is substantially the same as that assembled for the Association's meeting in September, and its aim is to call attention to the new phenomenon of the science of management. One of the exhibits, shown in this country for the first time, is a French device, known as a series of "grilles," for helping to determine occupational fitness. The grilles consist of a number of celluloid charts. All the occupations recognised by the French National Statistical Office have been analysed in regard to the physical qualities they demand, and given an index number which appears in the master chart. Apart from the master chart, there are 32 grilles, each of which relates to a specific physical or physiological characteristic in which the person to be tested may have been found defective. When all the grilles relating to characteristics in which the subject is defective are superposed on the master chart, the index numbers of the occupations for which he has no physical disability are still visible. The grilles may thus be regarded as a medical filter through which people may be passed to ensure that, at any rate, they are not put into vocations for which it can be shown at the outset they are gravely handicapped.

### Royal Academy of Medicine in Ireland

Dr. R. A. Stoney has been elected president of the Royal Academy of Medicine for 1935–36, with Dr. T. C. P. Kirkpatrick as general secretary and Dr. William Doolin secretary for foreign correspondence. The general council consists of Dr. E. T. Freeman, Dr. Gibbon FitzGibbon, Dr. W. G. Harvey, Mr. A. A. McConnell, Dr. W. R. O'Farrell, and Dr. J. P. Shanley. The sectional presidents are: medicine, Dr. V. M. Synge; surgery, Mr. Seton Pringle; obstetrics, Dr. J. F. Cunningham; pathology, Dr. W. R. O'Farrell; anatomy and physiology, Dr. J. M. O'Connor; State medicine, Dr. J. A. Harbison; laryngology and otology, Mr. S. H. Law.

### German Pharmacological Society

The twelfth meeting of this society will be held in Munich from Oct. 20th to 23rd under the presidency of Prof. Sigurd Janssen of Freiburg. Prof. E. B. Verney, of Cambridge, will open the first discussion, on the renal excretion of mammals and its physiological regulation. Other subjects to be debated are the relationship between chemical constitution and pharmacological action, anæsthesia and basal narcosis, and circulatory stimulants. Prof. Behrens (Dorotheenstr. 28, Berlin, N.W.7) is secretary of the congress.

## Medical Diary

### SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 14th.

*United Services.* 4.30 P.M. Air Commodore A. V. J. Richardson: Efficiency of Personnel in the Services (presidential address).

TUESDAY.

*General Meeting of Fellows.* 5.30 P.M.

*Pathology.* 8.15 for 8.30 P.M. J. C. Mottram: Some Tumours in Fowls by Radiation. I. Muende: Pigment Studies. S. L. Baker: Paget's Disease of the Skin. R. Hare: Classification of Hæmolytic streptococci by the Group Precipitin Reaction. J. Ross: Three Cases of Splenomegaly.

THURSDAY.

*Dermatology.* 5 P.M. (Cases at 4 P.M.) Dr. H. Haldin-Davis: 1. Papillomata occurring in Creosote Worker. Dr. Bertha Lewis (introduced by Dr. H. C. Semon): 2. Spoon Nails Associated with Cheilitis and Microcytic Anæmia. Dr. G. Bamber: 3. Epidermolysis Bullosa. Dr. J. E. M. Wigley: 4. Case for Diagnosis. ? Artefact. ? Radio-dermatitis. Dr. R. Klaber: 5. Folliculitis Decalvans et Atrophicans with Lichen Spinolosus. Dr. Louis Forman: 6. Parapsoriasis. Dr. H. C. Semon: 7. Papillomatosis. 8. Lupus Erythematous treated with Antileprol.

*Neurology.* 8.30 P.M. Dr. F. L. Golla: The Nervous System and the Organic Whole (presidential address).

FRIDAY.

*Radiology.* 7 P.M. Dr. C. G. Teall: Whither Radiology? (presidential address).

*Obstetrics and Gynæcology.* 8 P.M. Dr. J. W. Burns, Mr. C. M. Marshall, and Mr. D. W. Roy: The Treatment of Breech Presentations with Special Reference to Cases of Extended Legs and Arms. Mr. Aleck Bourne, Mr. Eardley Holland, and Mr. G. F. Gibberd will also speak.

HUNTERIAN SOCIETY.

MONDAY, Oct. 14th.—8.30 P.M. (Simpson's Restaurant, Bird-in-Hand-court, 76, Cheapside), Dr. W. B. Brander: The Challenge of the Sick (presidential address).

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26, Portland-place, W.

THURSDAY, Oct. 17th.—8.15 P.M., Sir Arthur Bagshawe: Presidential Address.

### LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

FRIDAY, Oct. 18th.—4 P.M., Sir Henry Dale, F.R.S.: Some Epochs in Medical Research (Harveian oration).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 14th, to SATURDAY, Oct. 19th.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. All-day course in cardiology.—METROPOLITAN HOSPITAL, Kingsland-road, E. All-day course in medicine, surgery, and the specialties.—MEDICAL SOCIETY OF LONDON, Chandos-street, W. Wed., 4 P.M., Mr. Malcolm Donaldson: Radium in Gynæcology. — NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Tues., 8.30 P.M., Mr. A. S. Parkes, F.R.S.: Ovary. Thurs., 8.30 P.M., Dr. H. Gardiner-Hill: Thyroid.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Broad-street, W.C. Tues., 5 P.M., Mr. C. L. Gimblett: Some Points in Medical Ophthal-

mology. Wed., 5 P.M., Mr. G. G. Penman: Demonstration of Fundi of Medical Interest.—INFANTS HOSPITAL, Vincent-square, S.W. Mon., Wed., and Fri., at 8 P.M., course in anatomy and physiology.—CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C. Sat. and Sun., course in obstetrics. (Open only to members of the Fellowship.)

LONDON HOSPITAL, E.
WEDNESDAY, Oct. 16th.—10 A.M., Mr. Keizer: Epithelial Odontomata and Treatment. 11 A.M., Dr. A. Maitland-Jones: Tuberculosis in Infancy and Childhood. Noon, Dr. M. H. Jupe: X ray Diagnosis of Pregnancy. 1.30 P.M., Dr. G. Riddoch: Demonstrations of Neurological Cases. 2.30 P.M., Dr. William Evans: Angina Pectoris, its Problems and Treatment. 3.30 P.M., Mr. C. Donald: Present Position of Thyroid Surgery. 4.30 P.M., Mr. Victor Dix: Retention of Urine.
THURSDAY.—10 A.M., Mr. C. B. Goulden: Significance of Ciliary Injection. 11 A.M., Dr. Donald Hunter: Science and Empiricism in Therapeutics. 12 noon, Dr. A. Burrows: X ray and Radium Treatment of Diseases of the Skin. 1 P.M., Mr. Eardley Holland: The Clinical Applications of Recent Work on the Female Sex-hormones. 2 P.M., Dr. John Parkinson: Cardiac Enlargement. 3 P.M., Dr. Horace Evans: Cases of Renal Disease. 4.15 P.M., Prof. Bulloch, F.R.S.: Medical Periodical Literature (Schorstein lecture).
FRIDAY.—10 A.M., Mr. R. Milne: The Technique of Splints, Crutches, &c. 11 A.M., Mr. N. Patterson: Some Remarks on Bronchoscopy and Œsophagoscopy. 12 noon, Mr. W. S. Perrin: Modern Treatment of Piles. 2 P.M., Mr. R. Howard: Surgical Demonstrations. 3 P.M., Dr. O. Leyton: High Carbohydrate Diets in Diabetes. 4.15 P.M., Dr. G. E. Vilvandré: Some Results of X-ray Treatment.
SATURDAY.—10 A.M., Dr. K. H. Tallerman: Feeding and Management of Young Infants. 11 A.M., Mr. A. M. A. Moore: The Fracture Problem. 12 Noon, Sir James Walton: The Surgery of Jaundice. (Open only to former students of the hospital.)

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.
THURSDAY, Oct. 17th.—9 P.M., Dr. R. R. Trail: Sanatorium Treatment of Tuberculosis.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Oct. 14th.—3.30 P.M., Dr. Kinnier Wilson: Aphasia, Apraxia (2).
TUESDAY.—3.30 P.M., Dr. Purdon Martin: The Cranial Nerves (2).
WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.
THURSDAY.—3.30 P.M., Dr. Riddoch: The Sensory System (2).
FRIDAY.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses (2).
Out-patient clinic daily at 2 P.M.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Oct. 16th.—4.30 P.M., Mr. H. P. Winsbury-White: The Ætiology of Urinary Calculus.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 17th.—2 P.M., Dr. Reginald Lightwood: Reticuloendotheliosis. 3 P.M., Dr. A. Signy: Specific Immunisations. (II.). Out-patient clinics daily at 10 A.M., and ward visits (except Wednesday) at 2 P.M.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.6.
MONDAY, Oct. 14th.—10 A.M., medical and surgical wards, skin clinic. 2 P.M., gynæcological and surgical wards, eye and gynæcological clinics. 4.15 P.M., Mr. Green-Armytage: Mistakes in Diagnosis.
TUESDAY.—10 A.M., medical wards and dental clinic. 11 A.M., surgical wards. 2 P.M., throat clinic. 4.15 P.M., Dr. Konstam: Heart Block.
WEDNESDAY.—10 A.M., children's wards and clinic, medical wards. 2 P.M., eye clinic. 4.15 P.M., Mr. Harvey Jackson: Minor Surgery of the Rectum.
THURSDAY.—10 A.M., neurological and gynæcological clinics. Noon, fracture clinic. 2 P.M., eye and genito-urinary clinics. 4 P.M., venereal diseases.
FRIDAY.—10 A.M., skin and dental clinics. Noon, Lecture on Treatment. 2 P.M., throat clinic. 4.15 P.M., Dr. Hugh Gordon: Acne.
SATURDAY.—10 A.M., surgical and children's clinics, medical wards. The lectures at 4.15 P.M. are open to all medical practitioners without fee. Operations and medical and surgical clinics daily at 2 P.M.

UNIVERSITY OF LONDON.
TUESDAY, Oct. 15th.—5 P.M. (University College Hospital medical school), Prof. Charles Singer: Some Important Contributions to Medical Science emanating from University College Hospital.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.
TUESDAY, Oct. 15th.—5 P.M., Dr. H. D. Haldin-Davis: Acne and Rosacea.
WEDNESDAY.—5 P.M., Dr. I. Muende: Histopathology of Common Skin Diseases.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.
THURSDAY, Oct. 17th.—8 P.M., Dr. L. A. Rowden: Looking Backward and Looking Forward (presidential address).

ROYAL INSTITUTE OF PUBLIC HEALTH.
MONDAY, Oct. 14th, TUESDAY and WEDNESDAY.—4 P.M. (Institute of Hygiene, 28, Portland-place, W.), Dr. P. Armand-Delille: Problems of Nutrition and Growth. (In English.)

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Keppel-street, W.C.
WEDNESDAY, Oct. 16th.—4.30 P.M., Prof. R. A. Fisher, F.R.S.: Eugenics and National Health.

GENERAL INFIRMARY, Leeds.
TUESDAY, Oct. 15th.—3.30 P.M., Mr. Moir: Demonstration of Surgical Cases.

PUBLIC DISPENSARY, Leeds.
WEDNESDAY, Oct. 16th.—4 P.M., Dr. H. H. Moll: Pneumonia.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Oct. 17th.—4.15 P.M., Dr. R. Ellis: Medical Treatment of Urinary Infections.

ROYAL INFIRMARY, Manchester.
TUESDAY, Oct. 15th.—4.15 P.M., Mr. A. Graham Bryce: Abscess of the Lung.
FRIDAY.—4.15 P.M., Dr. J. Wharton: Demonstration of Ophthalmic Cases.

# Appointments

FULD, HEINZ, M.B. Berlin, M.D. Heidelberg, L.R.C.P. Edin., has been appointed Senior Resident Medical Officer at the Birkenhead Municipal Hospital.

HALL, G. S., M.B. Birm., M.R.C.P. Lond., First Assistant in the Neurological Department at the General Hospital, Birmingham.

STRÖM-OLSEN, ROLF, M.D. Wales, D.P.M., Hon. Psychiatrist to the East Ham Memorial Hospital.

# Births, Marriages, and Deaths

## BIRTHS

BALFOUR.—On Sept. 27th, at Cowes, I.W., to Ana Balfour, M.B. Edin. (née Van Hoesen), wife of George Macdonald Balfour, M.B. Edin.—a daughter.

BURGESS—On Oct. 2nd, at Clifton, Bristol, the wife of Norman Burgess, M.D. Camb., of a daughter.

EDWARDS.—On Oct. 4th, in a London nursing-home, the wife of Harold C. Edwards, F.R.C.S., of a son.

MANDOW.—On Sept. 26th, at Sheerness, Kent, the wife of Dr. G. A. Mandow, of a daughter.

NELSON.—On Oct. 4th, at Bentinck-street, W., the wife of Dr. Alan Nelson, of a son.

PRIDIE.—On Sept. 30th, the wife of Kenneth H. Pridie, F.R.C.S. Eng., Clifton, Bristol, of a daughter.

SHARPEY-SCHAFER.—On Sept. 28th, the wife of E. P. Sharpey-Schafer, M.R.C.P. Lond., of a daughter.

## MARRIAGES

ALLEN—DUNNE.—On Oct. 3rd, 1935, at St. Wilfrid's Church, Cantley, near Doncaster, by the Archdeacon of Doncaster, the Venerable F. G. Sandford, M.A., assisted by the Rev. W. M. Tatham, M.A., Vicar of Cantley, and the Rev. G. Needham, B.A., Rector of Braithwell, Charles Henry Belton Allen, the Royal Ulster Rifles, only son of Major H. G. Allen, O.B.E., and Mrs. Allen, of Sidcup, Kent, to Katharine Elizabeth Mary Dunne, M.R.C.S., L.R.C.P., only daughter of Dr. A. B. Dunne, J.P., and Mrs. Dunne, of Cantley Lodge, Cantley, near Doncaster.

CHURCHER—NAYLOR.—On Sept. 27th, at Trinity-road Chapel, Upper Tooting, Dr. James C. Churcher, of Haifa, Palestine, to Gladys Louise Naylor, daughter of Mr. Alfred Naylor, Wandsworth Common.

JONES—MCCREA.—On Sept. 28th, at St. Mary Magdalene, St. Leonards-on-Sea, Ivor J. Jones, M.B. Lond., D.P.H., to Margot, daughter of Dr. B. H. McCrea, of Bargoed, Glamorganshire.

O'MEARA—RIDLEY.—On Oct. 3rd, at St. James's Church, Spanish-place, London, D. J. Patrick O'Meara, F.R.C.S. Edin., of Bury St. Edmunds, to Joan Cowell, younger daughter of Mr. A. Paul Ridley, Felixstowe.

RATCLIFFE—GREENALL.—On Oct. 3rd, at St. Jude's Church, Mapperley, Nottingham, Tom Arundel Ratcliffe, B.A., M.B., B.Chir., to Norah, only child of Mr. and Mrs. A. N. Greenall, of Nottingham.

TRIPP—THOMAS.—On Sept. 28th, at St. Paul's Church, Sketty, Swansea, Reginald Christopher Howard Tripp, M.R.C.S. Eng., Flying Officer, R.A.F., to Barbara, elder daughter of Frank Thomas, M.B. Camb., of Swansea.

1885–1935. GOLDEN WEDDING

LEECH—BOWYER.—On Oct. 10th, 1885, at St. Chrysostom's Church, Victoria Park, Manchester, by the Rev. T. N. Carter, M.A., Priestley Leech, M.D. Lond., F.R.C.S. Eng., eldest son of the late John Leech, J.P., to Emmie Melson, only daughter of the late Frances Yates Bowyer, of Manchester, King Cross, Halifax.

## DEATHS

FISHER.—On Sept. 28th, at Cleethorpes, W. H. Fisher, O.B.E., T.D., M.D. Camb., Lt.-Col., R.A.M.C., T. (ret.), aged 59.

HUMPHREYS.—On Oct. 1st, at Swansea, William Carr Humphreys, M.R.C.S. Eng., aged 79.

LITTLE.—On Oct. 2nd, at Ashley-gardens, S.W., Ernest Muirhead Little, F.R.C.S. Eng., aged 81.

PALK.—On Oct. 6th, at Folkestone, Charles Henry Leet Palk, M.B., F.R.C.S. Edin., Lt.-Col., Indian Medical Service (ret.).

SHELLY.—On Sept. 28th, at Hadleigh, Suffolk, Charles Edward Shelly, M.A., M.D. Camb., M.R.C.S. Eng., late of Hertford, aged 81.

*N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Comments, and Abstracts

## A RADIUM TELL-TALE

THE intention of Westminster Hospital, at its Annexe in Hampstead, to resume the use of a bomb containing four grammes, or double the quantity of radium now employed, has again raised the question of the safety of the operators, who must be daily in close proximity to this powerful source of radiation. While the new radium bomb will be continually at work for the whole twenty-four hours, no one operator will be concerned for more than a spell of eight hours in each day. During this time he will be required to spend an average of two minutes each hour in adjusting the bomb to the patient; and he may thus himself receive an exposure of sixteen minutes in all in the course of his duties. It is the accumulation of these daily small exposures, continuing for a period of months or even years, which has to be observed and controlled.

Besides the routine precautions always taken—namely, blood examination, regulation of rest and vacations, and, of course, the screening of the radium with heavy metals—it is the intention of the radium department of Westminster Hospital to make a systematic use of a new "tell-tale" which can be carried in the pocket of the operator, and which will reveal, on examination at the end of the day, how much effective exposure the operator has received.

Devised by the physicist of Westminster Hospital Annexe, it is based on principles investigated by research workers in Sweden. When going on duty the operator will take from a cabinet a small tube of elektron metal about two inches long, and in so doing will operate a simple clocking-in apparatus which indicates the time at which he takes possession of his tell-tale; at the end of the period for which he is on duty he will replace the tube and at the same time clock out. Inside the tube is a thin rod of elektron, which is supported on highly insulated amber buttons and charged to about 400 volts. The radiation from the radium which the operator encounters in the course of his work will cause this charge to leak off and the amount that leaks will measure the dose received. It will thus be possible to keep from day to day a complete record of the incidental exposures received by each operator, and to ascertain whether these are within the safe limits or not. If there is an increase in the case of any individual, immediate steps can be taken both to check his methods and to prevent ill-effects; if there is a general increase, then further safeguards must be incorporated in the apparatus. All the tests so far made are said to indicate that the protection now afforded is fully satisfactory.

A MEDICAL SCULPTOR.—A bust of Mr. Tielman Roos, the appeal court judge who as Minister of Justice did so much to reconcile old party divisions in South Africa, was unveiled by General Smuts at Bloemfontein on Sept. 10th. The sculptor was Dr. Joseph M. Coplans, a captain in the South African Medical Corps, who holds a qualification both in medicine and dentistry, and was at one time a student of St. George's Hospital, London.

# Vacancies

*For further information refer to the advertisement columns*

*Ashton-under-Lyne District Infirmary.*—H.S. At rate of £150.
*Beckenham, Bethlem Hospital, Monk's Orchard.*—Res. H.P. At rate of £150.
*Birkenhead County Borough.*—Asst. M.O. £750.
*Brighton, Royal Alexandra Hospital for Sick Children.*—H.S. £120.
*Brighton, Sussex Maternity and Women's Hospital.*—Res. H.S. £130.
*Burnley, Victoria Hospital.*—H.P. At rate of £150.
*Burton-on-Trent General Infirmary.*—H.P. and Cas. O. £150.
*Cairo, Egypt, Giza Memorial Ophthalmic Laboratory.*—Asst. Surgeon. L.E.800.
*Cancer Hospital, Fulham-road, S.W.*—Surgical Registrar.
*Cardiff, King Edward VII. Welsh National Memorial Association.*—Asst. Res. M.O. for Glan Ely Tuberculosis Hospital. £200.
*City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.*—H.P. At rate of £100.
*Cobham, Surrey, Schiff Home of Recovery.*—Res. H.S. At rate of £200.
*Connaught Hospital, Walthamstow, E.*—Hon. Anæsthetist. Clinical Assistant. Also Cas. O. At rate of £100.
*Doncaster Royal Infirmary.*—H.S. £175.
*Durham County Council.*—District Tuber. M.O. £500. Also M.O. for Earl's House Sanatorium. £450.
*Ealing Borough.*—Ophth. Surgeon. £275.
*Godalming, King George V. Sanatorium.*—Asst. M.O. £350.
*Goldie Leigh Hospital, Abbey Wood, S.E.*—Consulting Physician. £450.
*Halifax General Hospital.*—Jun. Res. M.O. £250.
*Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.*—H.S. At rate of £100.
*Hospital for Consumption and Diseases of the Chest, Brompton, S.W.*—Res. Surg. O. At rate of £150.
*Hospital for Epilepsy and Paralysis, Maida Vale, W.*—Res. M.O. Also H.P. At rate of £150 and £100 respectively.
*Hospital for Sick Children, Great Ormond-street, W.C.*—Res. H.P. and H.S. Each at rate of £100.
*Ipswich, East Suffolk and Ipswich Hospital.*—Res. Surg. Officer. £400. Also H.S. £144.
*Isle of Wight County Council.*—Additional Asst. County M.O. £500.
*Jersey General Hospital and Poor Law Infirmary.*—Asst. Res. M.O. At rate of £150.
*Kingston-upon-Hull City and County.*—Asst. M.O.H. £600.
*Lambeth Hospital, Brook-street, S.E.*—Pathologist. £1100–£50–£1300.
*Lancaster, County Mental Hospital.*—Temp. Asst. M.O. 7 guineas per week.
*Lancaster Royal Infirmary.*—Jun. H.S. At rate of £130.
*Leeds City.*—Asst. Clin. Tuber. O. £500.
*Lewisham Hospital, High-street, S.E.*—Asst. M.O. £350.
*Liverpool University.*—Lectureship in Bacteriology. £400.
*L.C.C.*—Technical Assistants. Each 95*s.*—5*s.*—120*s.* a week.
*London Jewish Hospital, Stepney Green, E.*—Res. M.O. and H.P. At rate of £150. Also H.S. and Cas. O. Each at rate of £100.
*London Lock Hospital, 283, Harrow-road, W.*—Res. M.O. for Male Depts. Also Surgical Reg. for Female Lock Hospital. At rate of £175 and £100 respectively.
*London University.*—University Chair of Anatomy at King's College. £1100.
*Manchester Hospital for Consumption and Diseases of the Throat and Chest.*—Res. M.O. for Ear, Nose, and Throat Dept. £200.
*Manchester Royal Infirmary.*—H.S. to Aural Gyn. and Ophth. Depts. Also 4 H.S.'s. Each at rate of £50.
*Mount Vernon Hospital, Northwood, Middlesex.*—H.S. At rate of £150.
*Newcastle-upon-Tyne, Royal Victoria Infirmary.*—Res. Anæsthetist. £200.
*North Kensington Women's Welfare Centre, 12, Telford-road, W.*—Medical Officer.
*North-Western Hospital, Lawn-road, Hampstead, N.W.*—Pathologist. £1100–£50–£1300.
*Norwich, Norfolk and Norwich Hospital.*—H.S. to Spec. Depts. Also Cas. O. Each at rate of £120.
*Nottingham, Central Mental Hospital.*—Jun. Asst. M.O. £350.
*Nottingham Hospital for Women.*—H.S. At rate of £150.
*Paddington Metropolitan Borough.*—Visiting M.O. 1½ guineas per attendance.
*Portsmouth Royal Hospital.*—H.S. At rate of £130.
*Queen's Hospital for Children, Hackney, E.*—Dermatologist.
*Rochdale County Borough.*—Res. M.O. for Birch Hill Hospital. At rate of £225.
*Royal Air Force Medical Service.*—Commissions.
*Royal Dental Hospital of London, 32, Leicester-square, W.C.*—Two Part-time House Anæsthetists. 10*s.* 6*d.* per session.
*Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.*—H.P. At rate of £100.
*St. Albans, Hill End Hospital for Mental and Nervous Disorders.*—H.P.'s. Each at rate of £165.
*St. Bartholomew's Hospital, E.C.*—Asst. Neurologist.
*St. Charles' Hospital, St. Charles'-square, Ladbroke-grove, W.*—Asst. M.O. £350.
*St. James' Hospital, Ouseley-road, Balham, S.W.*—Asst. M.O. £350.
*St. Mary's Hospital, W.*—Second Obstet. Surgeon for Out-patients.
*Salisbury, General Infirmary.*—Res. M.O. £250.
*Sheffield Royal Infirmary.*—H.S. Also Aural H.S. Each at rate of £80.
*Stoke-on-Trent, Stanfield Sanatorium.*—Res. M.O. £250.
*Surrey County Council.*—Jun. Asst. M.O. for County Sanatorium. At rate of £250.
*Swanley Hospital Convalescent Home, Parkwood.*—Res. M.O. At rate of £200.
*Tilbury Hospital.*—Med. Supt. £200.
*Victoria Hospital for Children, Tite-street, Chelsea, S.W.*—Sen. Res. M.O. £200. Also Cas. Sorting O. At rate of £200.
*Western Ophthalmic Hospital, Marylebone-road, N.W.*—Sen. and Jun. Res. H.S.'s. At rate of £150 and £100 respectively. Also Hon. Asst. Surgeon.
*Willesden General Hospital, Harlesden-road, N.W.*—Physio-Therapeutist. £75. Also Hon. Physician.
*Winchester, Royal Hampshire County Hospital.*—H.S. At rate of £125.
*Wolverhampton and Midland Counties Eye Infirmary.*—H.S. £150.
*Wolverhampton Royal Hospital.*—H.S. At rate of £100.
*York County Hospital.*—H.S. to Eye, Ear, Nose, and Throat Dept. £150.